THE GAS JOURNAL

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A Glance at the Contents

European Gas Company.

A report is given of the annual meeting of this Company. [p. 742.]

Joint Industrial Gas Council.

The Council visited Watson House, the headquarters of the Research and Training Section of the Sales Department of the Gas Light and Coke Company last week. [p. 725.]

Benzole Recovery.

"Several gas undertakings are now abstracting benzole—and finding the process a paying one. Where the declared quality of the gas and the process of manufacture are such that washing for benzole is practicable, then it should make a useful source of additional revenue."—Mr. C. W. Ward, in his Presidential Address to the Manchester Association. [p. 730.]

Radiation, Ltd.

As will be seen from our report of the Chairman's speech at the annual meeting of Radiation, Ltd., the Company's progress in the difficult year 1931 was satisfactory. [p. 745.]

Virtues of Gas Drying.

"If we can prevent liquid moisture from being deposited on the internal surfaces of our distribution systems, then corrosion of such ferrous surfaces must cease. . . . I am not concerned with the way this position is achieved, whether the medium is calcium chloride or glycerin in a washer, or by compression or refrigeration of the gas. The point is that it ought to be achieved."—Mr. R. H. Ruthven, in his Presidential Address to the Southern Association. [p. 736.]

Forthcoming Engagements

March 24.—SOUTHERN ASSOCIATION OF GAS ENGINEERS (EASTERN DISTRICT).—Meeting at 28, Grosvenor Gardens, S.W. 1, 2.30 p.m.

April 2.—SCOTTISH JUNIOR ASSOCIATION (EASTERN DISTRICT).—Visit to Messrs. Charles Tennant's Vitriol Works, and Corporation Gas-Works, Carnoustie.

April 5.—INSTITUTION OF GAS ENGINEERS.—Joint Lighting Committee, 2.15 p.m., 28, Grosvenor Gardens, S.W. 1.

April 7.—MIDLAND JUNIOR ASSOCIATION.—Paper by Mr. W. E. Cone.

April 8.—NORTH BRITISH ASSOCIATION.—Spring Meeting, Edinburgh.

April 9.—LONDON AND SOUTHERN DISTRICT JUNIOR ASSOCIATION.—Visit to Sydenham Works of the South Suburban Gas Company.

April 11.—INSTITUTION OF GAS ENGINEERS.—Finance Sub-Committee, 2 p.m.; Finance Committee, 2.30 p.m.; Executive Committee of the Council, 3 p.m.; Benevolent Fund Committee of Management, 4.30 p.m.; 28, Grosvenor Gardens, S.W. 1.

April 12.—NATIONAL GAS COUNCIL.—Meeting of Central Executive Board, 28, Grosvenor Gardens, S.W. 1.

April 12.—INSTITUTION OF GAS ENGINEERS.—Council, 10 a.m.; Joint Research Committee of the Institution and Leeds University, meeting, luncheon, and visit to Croydon Gas-Works; Education Committee, 4 p.m.; 28, Grosvenor Gardens, S.W. 1.

April 13.—INSTITUTION OF GAS ENGINEERS. — Liquor Effluents and Ammonia Sub-Committee, 10.30 a.m.; General Research Committee, 2.30 p.m.; 28, Grosvenor Gardens, S.W. 1.

April 16.—MIDLAND JUNIOR ASSOCIATION.—Paper by Mr. W. W. Smirles, B.Sc.

April 16.—YORKSHIRE JUNIOR ASSOCIATION.—Meeting at Rotherham and President's Address.

April 23.—WESTERN JUNIOR ASSOCIATION.—Meeting at Trowbridge and President's Address.

May 6.—NORTH OF ENGLAND GAS MANAGERS' ASSOCIATION.—Annual Meeting, Newcastle-upon-Tyne.

May 10.—NATIONAL GAS COUNCIL.—Meeting of Central Executive Board, 28, Grosvenor Gardens, S.W. 1.

May 10.—NATIONAL GAS COUNCIL.—Annual General Meeting.

May 26.—SOCIETY OF BRITISH GAS INDUSTRIES.—General Meeting in London.

June 7-9.—INSTITUTION OF GAS ENGINEERS.—General Meeting in London.

June 14.—NATIONAL GAS COUNCIL.—Meeting of Central Executive Board, 28, Grosvenor Gardens, S.W. 1.

1932 "JOURNAL" Directory.

Page 4. BAKEWELL. J. E. Tiplady appointed Engineer and Manager vice T. W. Tiplady retired.

Page 54. PORT TALBOT. A. J. Bond deceased.

Page 66. SWINDON. C. H. Chester appointed General Manager and Secretary vice E. G. Vince, Secretary.

Pages 78 and 86. ARBROATH AND KINROSS. David Morton, Engineer and Manager, Kinross, appointed Engineer and Manager, Arbroath.

Page 103. SYDNEY, N.S.W. (Australian Gas Light Company). A. Wilson, Consulting Engineer; H. Tindale, General Manager and Secretary.

EDITORIAL NOTES

Better Service

THERE can be no doubt at all that competition has wrought a marked change for the better in the service which the Gas Industry of 1932 is able to offer the consumer, and for the most part does offer. This competition is in no way diminishing, and the natural corollary to this is that our service will have to be yet further improved. This matter of service is at once simple and complicated. The result of the service is simply cheap gas and coke utilized with the highest efficiency; the means of ensuring this service are often complicated, but it must be the endeavour of each undertaking to work out its own means. To-day, for example, there is definite and unreasonable lack of service in coke sales, which has a direct adverse effect on the price at which gas can be sold to the domestic consumer in face of electrical competition and the industrialist who has cheap and plentiful supplies of oil of uniform quality at his command. In spite of a great deal of excellent talk, few undertakings in the country have made it a point to sell coke of constant quality. In allowing such a state of affairs to continue, the Industry is merely mocking its well printed slogan of "Service." The quality of the coke supplied as "boiler nuts" varies almost with every delivery; and the householder is at first bewildered and, secondly, quite rightly annoyed. It is, in brief, impossible for him to adjust his boiler from one day to the next. We are convinced that ninety people out of a hundred would be quite willing to gain comfort by paying a little more, if need be, for a uniform gas-works coke; and we are convinced, too, that the price of such a fuel need be no higher, for the demand for it would astonish the producer.

We have all heard of what the effect would be if every gas consumer burned only one extra ton of gas-works coke each year. Why not induce him to do this? At present, due solely to lack of uniformity of supplies, the inducement is absurdly small; and we are in sympathetic agreement—as staunch users of a varied collection of graded "boiler nuts"—with Mr. R. H. Ruthven, of Ramsgate, who, in his Presidential Address to the Southern Association of Gas Engineers and Managers, urges the marketing of a 95 p.ct. uniform coke. He suggests a standard inert content and correct grading. We agree that his inert content can be achieved; but even if we increase his figure by half, and keep it constant, and supply at all times the correct grade of fuel, our Industry could work wonders. Mr. Ruthven quotes from the Inaugural Address of Mr. W. A. M. Valon to the Incorporated Gas Institute in 1892. Forty years ago Mr. Valon asked his hearers to improve the quality of gas-works coke and to co-operate in its marketing—to avoid "dumping," and endeavour to achieve some standard of uniformity of supply. It has taken some little time for his advice to be taken seriously; but we now have the London and Counties Coke Association, which is well deserving of imitation in other parts of Great Britain. This Association is a start in the right direction. We do need greater co-ordination of effort in the preparation of coke, the design of coke-burning apparatus, the advertising of the advantages of gas-works coke as a smokeless fuel, and the advising of consumers as to its economical use.

There are many other matters with which Mr. Ruthven deals in his Address, which is published in to-day's "JOURNAL;" and at least two of these are of topical interest and general importance. These items, both of which are bound up in the aim of better service, are dry gas and carbonization in intermittent vertical chambers. And on both subjects Mr. Ruthven is extraordinarily well qualified to speak. His work on the corrosion of iron and steel is well known to our readers, many of whom will recollect his paper before the Southern Association six years ago. His point about dry gas is straightforward—whatever the means employed, calcium chloride or glycerine, compression or refrigeration—the distribution of a dried gas results in direct and indirect economy to the supplier and far greater satisfaction to the user. It was in May, 1929, that a dried gas was first distributed by the Ramsgate Corporation. In the first six months of that year the number of complaints of defective supplies of gas from their 10,000 consumers was 1410, caused by naphthalene deposition or water and rust. For the last six months of 1931 the corresponding figure was 11. No further emphasis is needed of the value of naphthalene washed and dried gas from the point of view of service to the consumer. Also, "there is no question that the condition of Ramsgate meters has steadily and progressively improved." Again, a dried gas demands an oil film on the water in the holder tank, provided the washer, as is usual, is at the holder inlet; and Mr. Ruthven puts forward the view that the effect of the oil in preventing internal corrosion of the holder should reduce the premiums required for gasholder insurances. As to intermittent chamber ovens, Mr. Ruthven was responsible for the first installation of Woodall-Duckham chambers in this country, as long ago as 1926; and it reflects great credit on the contractors that from the day gas-making commenced the plant was not shut down for a single day until it was re-conditioned nearly five years later, and just prior to being shut down it was still producing the guaranteed thermal yield from a second-class Durham coal. The gist of Mr. Ruthven's interesting comments on this system of carbonization is that it is established as competitive with any other method of carbonization—that "there is now nothing of the experimental installation business about the system." And the gist of the Address as a whole is better service—cheaper and better gas and coke more efficiently utilized.

In Times of Stress

SIX months ago it would not have been unreasonable to forecast a decline in gas sales due solely to the public's lower purchasing power. As a matter of fact, however, as the columns of the "JOURNAL" during the past few weeks testify, the general progress of our Industry was maintained during 1931—a year of unprecedented trade depression and shortage of money. The results of most gas companies must be a tonic and an encouragement, and the increases in sales of many undertakings afford remarkable proof of the growing usefulness and popularity of gas. Taking into account all the adverse circumstances of an abnormal year, Mr. C. W. Ward, in his Presidential Address to the Manchester District Association of Gas Engineers and Managers—see later pages—expresses surprise that gas sales have been maintained at such a high level. Our view is that increased efficiency in gas manufacture and supply, better service, and continued propaganda are the factors to which this happy result is attributable; and because much greater all-round efficiency is possible, we are full of optimism for the future of gas. Immediately the tide of prosperity returns, gas sales will expand enormously in both home and industry. Certainly none of the increases in sales can be put down to favourable weather conditions in 1931. The previous year was considered bad, and last year was no better; the average night temperatures of the two years were practically identical, what little balance there was favouring 1931, which is not the view shared by Mr. Ward, who, in regard to weather cannot "recall such a long period of adverse conditions." The electricity industry had, of course, the same handicap to progress, but the fact remains that the returns for 1930 are very far short of the estimates of the grid scheme—20 p.ct. in arrear of estimated total sales of current, and 30 p.ct. short of estimated consumption per capita.

In our issue of March 2, referring to the Gas Regulation Act of 1920, we said that "no measure has done

anything like so much to increase efficiency of gas manufacture and supply, and to enhance the goodwill of the consumer . . . the sale of gas by the therm has conduced to a supply being given which meets the consumer's needs better than the supplies given in most districts in earlier periods." The expression the " Gas Consumers' Charter " used to describe the Act of 1920 by Mr. W. J. A. Butterfield in his address at the Joint Gas Conference in Birmingham will doubtless be remembered by many of our readers. Consequently we think that Mr. Ward dismisses the value of the therm rather too lightly in his desire to see it abolished as a unit of measure. Though he would have preferred a " gas unit " of 3412 B.Th.U.—one directly comparable with the electrical unit—he is convinced of the utility of the unit of 4000 B.Th.U. His experience is that " in the gas unit we have a measure easily understood by our consumers, whereas to-day I am yet asked, ' What is a therm? ' " We should be glad to know the reply he gives to the consumer who asks what a " unit " is, and why a consumer can comprehend 4000 B.Th.U. better than 100,000 B.Th.U. One thing at all events is evident—that the gas unit, at 4000 B.Th.U., is not the same as the electrical unit. The fact that a consumer of electricity knows what service he can get from 100 units of current does not give him an accurate guide as to what service he can obtain from 100 gas units.

On the question of bye-products Mr. Ward has much of interest to impart. Particularly important are his remarks on benzole recovery; it is being more fully appreciated that washing for benzole is a paying proposition where the carbonizing plant and the declared calorific value are suitable. Benzole recovery is a scientific and technically sound method of effecting dilution; and the particular process to which Mr. Ward refers, and which was described in the " JOURNAL " for Jan 27 last, appears to have great possibilities. The combined naphthalene washing, dehydrating, and benzole recovery plant has given a new aspect to the question not only of benzole recovery but also of gas drying and naphthalene washing. With the combination of benzole recovery, a gas drying and naphthalene washing plant yields an immediate profit, though there is, of course, no question of the ultimate profit from the drying and washing plant, as is well demonstrated by the experience of Mr. Ruthven at Ramsgate, to which we have already referred.

Our readers know our views on coke sales—that care taken in coke preparation and marketing is repaid. The demand for good, uniform coke is growing; old and not ill-founded prejudices are being changed into goodwill by those gas undertakings who hold an enlightened view of the future of solid smokeless fuel produced by high-temperature carbonization, and are acting upon this view. Mr. Ward tells us of the success which has attended his efforts to sell a satisfactory coke in an up-to-date manner; and we thoroughly agree with him that, " with a good fuel made to suit customers' requirements there is a market awaiting development." We also agree with him that more co-operation is desirable between the producers of gas coke and the makers of oven coke.

Mr. Ward's Address is a wide survey of current conditions in the Gas Industry, and his observations on service and the industrial load are very much to the point. He discusses the Education Scheme of the Institution, pointing with regret to the relatively few entrants for the Diploma in Gas Engineering and to the fact that no Diploma in Gas Supply has yet been awarded. It seems to us that some radical change is needed in the planning of the Gas Supply Course, which in its present form obviously offers no attraction to the student. A remedy to this state of affairs ought to be found quickly, for the problems of gas distribution and utilization call for men with an education quite equal to the standard attained by the works engineer.

" Assessment of Gas Undertakings."

Copies of the 1932 Supplement to Seymour's " Assessment of Gas Undertakings " and of the complete New Edition will be dispatched immediately after Easter to those whose orders have been received.

" Putting the Clock Back "

PROBABLY the great majority of people are to-day of the opinion that we are over-governed. There are far too many " must nots " to please those who would like to imagine that they are living in a " free country." A number of irritating ordinances by which our activities are circumscribed can be removed only when Parliament so wills, and in the meantime must be borne. But because the voters are compelled to endure some Parliamentary enactments which—in all probability to most people—are distasteful, that is no reason why local authorities should restrict the liberty of choice of those who (from necessity or preference) become tenants on their housing estates in so important a matter to their welfare as the form of lighting, heating, and cooking to be employed.

More liberty rather than less is required, and we should be able to look to our representatives, whether in Parliament or in the Council Chamber, to give it to us. The Kettering Urban District Council, however, have been acting in a manner which we cannot regard as other than " putting the clock back," and which we were glad to be able to chronicle in the Editorial pages of last week's issue of the " JOURNAL " had been discountenanced by the House of Commons. It was stated then that conditions in Kettering had resulted in the local Gas Company promoting a Bill in the present Session of Parliament, one of the clauses of which prohibits the Kettering Urban District Council from prescribing the particular form of lighting and heating to be used in their Council houses. This Bill was down for second reading on Monday, March 14, when its rejection was moved by a Labour Member from the Rhondda, on the ground that it was an attempt on the part of a private Company to " lay themselves on a pitch " which had cost the ratepayers a considerable amount of money. This member went on to explain that the Urban District Council, who owned the electricity works, passed a resolution that only electricity should be used in their own houses and sites. He urged that the Gas Company's Bill would inpose a burden on the district, because a large amount of the ratepayers' money had been spent on the electricity works and Council housing. After a spirited debate, in which the strength of the position taken up in this matter by the Gas Industry became increasingly apparent, the Bill was read a second time in the House of Commons without a division.

In our next issue we shall be devoting some space to an outline of the arguments which were adduced on that occasion, and we are of the opinion that most unbiased persons will admit the case put forward on behalf of the Gas Company to have been conclusive. From a general point of view it seems difficult to understand how there could be two opinions on the matter, and we are not surprised, in spite of the attitude adopted by the Council, to learn from Mr. Eastwood, the local Member, that the feeling in Kettering on the subject of the Bill is: " Let the tenant have his own choice; it is up to the tenant to make up his mind." The people of Kettering have evidently a strong sense of what is their due; and it is satisfactory to note that, so far as Mr. Eastwood could ascertain, even the Urban District Council itself was not unanimous in opposing the Bill. " There were members of the Council who held the popular view that the tenant ought to make his own choice."

The points raised on behalf of the Gas Company's contention during the debate which preceded the second reading of the Kettering Bill will be reproduced in the " JOURNAL " mainly in order that they may be kept for reference when similar cases occur in future. It may be, as stated some time ago by the Minister of Health, that in the case of 90 p.ct. of Council houses there is no question of injustice, and only in the remaining 10 p.ct. is there a desire to discriminate adversely against a local company. But this remaining 10 p.ct. must be fought step by step by the Industry, in order to ensure that gas has that which is demanded for it—a fair field and no favour.

PERSONAL

C. H. CHESTER.

Mr. Cecil H. Chester, F.C.S., Assoc.M.Inst.Gas E., Deputy Engineer and Manager to the Wakefield Gaslight Company, has been appointed General Manager and Secretary to the Swindon United Gas Company, in succession to Mr. E. George Vince, who is retiring at the end of April. There were 70 applications for the post.

Mr. Chester, who is 31 years of age, will take up his new appointment on May 2. He received his early education at Wakefield Academy High School, followed by a comprehensive training as a gas engineer in all departments—works, distribution, drawing office, and laboratory, finishing with management experience in the general office, under Mr. H. Townsend, then Managing Director of the Wakefield Gaslight Company.

From 1919 to 1922 he was Engineer to Tully Gas Plants, Ltd., in charge of the erection of gas plants in various parts of the British Isles, and in 1922 he was appointed Assistant Engineer, Manager, and Secretary to the South Bank and Normanby Gaslight and Coke Company, Ltd He left there in 1924, when he became associated with the Wakefield Gaslight Company.

Mr. Chester is a Past-President of the Yorkshire Junior Gas Association, and has acted as Hon. Secretary of the Gas Education Scheme for Yorkshire since the inauguration of the Scheme.

Mr. Henry Towsley Carr, who has held the position of Distribution Superintendent with the South Shields Gas Company during the past 29 years, has, owing to health reasons, had to relinquish that position, but his services are being retained by the Company in another capacity.

Mr. A. B. Britton, Resident Gas Manager at the Swan Village Station of the City of Birmingham Gas Department, was last week appointed Engineer and Manager to the Hinckley Urban District Council Gas Department, in succession to Mr. Fred Lee. There were 89 applicants for the post. Mr. Britton, who was born in 1893, was educated at King Edward VI. Grammar School, Aston; Lawrence's College, Birmingham, for a commercial training; and the Municipal Technical School, Birmingham, where he obtained final-grade certificates in civil and mechanical engineering subjects. He joined the chemical staff of the Birmingham Corporation Gas Department in 1910, and remained until 1916, when he was appointed junior engineer at Swan Village Works, which post he held until 1919, when he went to Windsor Street as junior engineer, returning to Swan Village as works engineer in 1923. He has since held this position. At Swan Village, under the late Mr. R. A. S. Browning, he had experience of reconstruction and extensions, in addition to taking charge of the whole of the works. The Woodall-Duckham retort house of 32 retorts has been completely re-built on modern lines, increasing the capacity from 2 to 3 million c.ft. per day.

Mr. J. Watson Napier, B.Sc., the son of Mr. J. W. Napier, Gas Engineer and Manager at Alloa, has taken up an appointment with Messrs. Newton, Chambers, & Co., Ltd., as Manager of their Chemical Engineering Section. After graduating at Glasgow University in 1928, Mr. Watson Napier proceeded to Chicago, and was under Mr. Samuel Insull, of the Midland Utilities, gaining practical experience in American gas practice at various works. For three years he acted as Assistant Engineer with Messrs. Humphreys & Glasgow, Ltd., which position he now relinquishes on his new appointment.

OBITUARY

ARCHIBALD DOUGALL.

The death has taken place suddenly of Mr. Archibald Dougall, of Messrs. Dougall, Coombs & Co., Ltd., Structural Engineers, Wellington, who, at the annual meeting of the Gas Institute of New Zealand last month read a paper on "The Hawkes Bay Earthquake," with notes on its effect upon Gas Undertakings in Hawkes Bay. As Mr. Dougall had been for 12 years General Manager and Chief Engineer of the Wellington Gas Company, Ltd., and was since then in business on his own account, this paper will be of interest to gas men generally throughout the world. Our readers will remember the article by Mr. Dougall, on the Hawkes Bay Earthquake, which was published in the "Journal" last December.

Mr. B. B. Waller, of Messrs. George Waller & Son, Ltd., Stroud, writes as follows:

It was my good fortune to make the acquaintance of Mr. Dougall when in New Zealand early in 1926. He was a gentleman in the highest sense of the word. He had a great charm of manner, and was a gas engineer of outstanding ability. He was always ready to give freely of his experience, and his death will, I am sure, be a great loss to the Gas Industry of New Zealand.

The death is reported from Paris at the age of 81 years of one of the doyens of the French Gas Industry—M. Emile Brisac. Deceased was connected with the Société du Gaz de Paris for over fifty years, and as a mark of appreciation of his work and long service he was given the title of the Hon. Chief Engineer of the Company.

His many friends in the North of England and Scotland will feel much sympathy with Mr. Walter B. Hudson, the death of whose wife occurred on March 18, after a short illness.

The death occurred, on Jan. 24 last, after a brief illness, of Mr. W. Gater, Secretary to the Shanghai Gas Company, Ltd.

CORRESPONDENCE

Development in Gas Fire Design

Sir,—Please allow me to express appreciation of Herr J. Körting's further observations on this subject, and of the further illustrations of the Askania gas fire. A conclusive opinion on the fire as set in the hearth could best be formed by seeing the setting at other angles. In the first illustration an impression of "bulkiness" is given and also lack of cohesion; the fitment of pipes is also rather obtrusive. The second illustration is free from these objections, and so far as can be judged from a picture is in no conflict with æstheticism, demonstrating that it is possible to have an appliance which will give higher effective duty by utilizing warmed air as well as radiant energy without sacrifice of other desirable attributes.

Herr Körting quotes tests made by Prof. Knoblauch on a fire of the Askania type thus: Radiant energy 39 p.ct., convected heat 46 p.ct., and flue heat 15 p.ct. These figures are on the net calorific power, the German "scientific basis" of assessment. When converted to "gross" calorific value (British practice), the percentages for convection and radiation here given would be less, and the flue heat correspondingly greater. In the absence of actual figures on the gas used in the tests, a rough approximation of the conversion to "gross" would be: Radiation 35, convection 41, and flue heat 24 p.ct.

If memory serves one accurately it was claimed a few years ago that some of our modern British fires yielded 50 p.ct. of heat by radiation, and as efficiencies here are calculated on "gross" value, it was the equivalent of, say, 55 p.ct. on the "net" basis. By inference that earlier claim did not dig itself in thoroughly, or I would assuredly not be in doubt as to whether it is maintained to-day. Not for many years have we had official figures of radiation. From the technical aspect a revision of figures as applied to the latest designs and radiants would be helpful. Reverting to the Askania fire, one is struck by the preponderance of convected heat, of which the ratio is 17 p.ct. greater than that of radiation. This is not quite the appliance some of us are looking for—viz., one which, while giving maximum radiation effect, will also utilize a portion of the heat now passing up the flue by diverting it to warming air passing to the room. It is common knowledge that the heat at present discharged to the flue is in excess of that needful to ensure satisfactory ventilation.

Herr Körting quite rightly hesitates "to give actual figures of radiant efficiency," because these may vary according to the method employed. In my view the whole question of assessing radiant efficieney is re-opened when fires diverge from the common type of upright radiants set in a straight line. There is a standardized method in Britain, as devised by the Leeds University, for the radiation tests done for the Institution of Gas Engineers, which was accepted as satisfactory for comparative purposes, so long as radiants were of the common type referred to. But will that method give a true reflex of comparison when radiants lean forward or backward, or are in semi-circular formation? For the guidance of gas engineers and of appliance manufacturers it would seem the time has arrived when a fresh pronouncement should officially be made upon the assessment of radiation in the light of the modifications in design of gas fires which have appeared.

Other points in Herr Körting's letter relate to the ob

servations which his previous letter evoked from the Research Department of Cannon Iron Foundries, Ltd., and on these I have no inclination to intrude. In their letter ("JOURNAL," Feb. 10) the Research Department said it would be an advantage to all concerned if some independent authority—the Research Sub-Committee at Leeds or the Research Department of the Gas Light and Coke Company—were to publish figures representative of various types of fires, expressed as the ratio of heat radiated to gross heat supplied. With that aspiration I am in full accord. If the Industry had but established its own "Appliances Gas Testing Laboratory" as has so often been advocated in various quarters, the information desired by the Cannon Iron Foundries Research Department would have been readily forthcoming. If we cannot have a national laboratory, is it not possible to link up in some kind of collaborative scheme those owned and directed by gas undertakings, whereby questions of national import, such as those which have arisen in this correspondence, can be investigated and reported upon for the benefit of the Industry as a whole, and towards the cost of which the whole Industry makes its fair contribution?

Yours, &c.,
JNO. H. BREARLEY.

Wharmton, Harrogate,
March 18, 1932.

New Use for Gas!

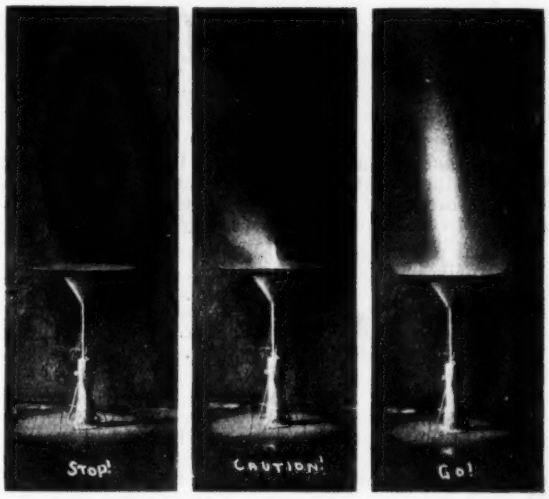
SIR,—The enclosed photographs may interest you as an example of a new application of coal gas. The views represent an apparatus I have had constructed to show, in model form, the action of a natural geyser.

The lower vessel is filled with water, which also fills the upright tube. This latter is carried down inside the lower vessel to within half-an-inch of the bottom. Water also fills the dish for an inch above the upright tube.

When heat is applied to the lower vessel the water is gradually raised to boiling point throughout the whole apparatus. Once boiling point is reached, steam accumulates in the top of the lower vessel. This steam is under a pressure equal to the head of water in the upright tube. In time this pressure is sufficient to force the contents of the lower vessel out of the central tube as a fountain of boiling water. This discharge is succeeded by a shower of boiling water and a fountain of steam. All water is caught and retained by the dish.

The steam once discharged, a vacuum is formed in the lower vessel, the water in the dish is immediately drawn down with a loud sough, and the cycle begins again.

The periodicity of the discharge is governed by the size of the lower vessel and the amount of heat applied. In the model in question, and with a consumption of about 5 c.ft. per hour, the average periodicity during 1½ hours was 5 minutes. The average time occupied by each discharge was 40 seconds. The periodicity becomes gradually less as water is lost by evaporation.



It is doubtful whether in a natural geyser vacuum plays any part in the operation at all. One is more inclined to believe that the water rushes down through the throat of the geyser by sheer force of gravity. But there is no doubt that superheated steam under an enormous pressure forces the water up and out of a natural geyser, sometimes to a height of 80 ft., the water falling back again into the hollow or pool usually surrounding the mouth of such a geyser.

The little model shown in the photographs illustrates these actions very well.

Yours, &c.,
A. M'I. CLELAND,
Distribution Superintendent.

Gas Department, Belfast,
March 21, 1932.

REVIEWS

APPLIED CHEMISTRY IN 1931.*

The Annual Reports of the Society of Chemical Industry on the Progress of Applied Chemistry are always welcome. They have established themselves as a reliable résumé of developments in a wide field during a twelve-month period, each field being dealt with by experts closely in touch with the scientific and technical literature of this and other countries. The bibliography throughout the volume is extensive and of great value to those who desire to study the original sources. The high standard of accuracy for which the volume has a well-merited reputation is maintained in the new issue. The sections of primary interest to our readers are, of course, "Fuel," which is compiled by Dr. J. G. King, of the Fuel Research Station, and "Gas, Carbonization, Tar, and Tar Products," for which Mr. H. Hollings and Mr. W. A. Voss, of the Gas Light and Coke Company, are responsible. Next in direct application come "General, Plant, and Machinery," "Acids, Alkalis, and Salts," and "Refractories."

We shall not attempt to "review" the book, but we call attention to a few items in the two sections dealing with Fuel and Gas which may afford some indication of the extraordinary amount and variety of information packed into the work. In regard to coal cleaning, Dr. King observes that 1931 was characterized by steady progress in the adoption and development of existing coal cleaning methods rather than by any appearance of new processes and methods. He gives a table showing the progress made during the years 1927-30. In 1927 the number of washeries was 500, dry cleaning plants 27, and froth flotation 19. The quantities of coal treated by these plants were respectively 49,053,761, 1,414,291, and 932,036 tons. In 1930 there were 583 washeries, 91 dry cleaning plants, and 6 froth flotation plants; and the coal treated by these plants amounted respectively to 66,285,000, 6,305,000, and 123,000 tons. The steady growth of dry cleaning (from 20·5 p.ct. of the total output in 1927 to 29·8 p.ct. in 1930) through years of serious trade depression is worthy of note. In wet washeries there appears an increased interest in dedusting before washing in order to reduce the amount of slurry formed in the washing operation and to reduce the difficulty of subsequent de-watering and drainage of the clean products. Dealing with domestic heating, Dr. King mentions a simple and inexpensive attachment for a well-type fireplace, developed at the Fuel Research Station, which permits the free combustion even of refractory metallurgical coke. On the important question of hydrogenation, the significance is emphasized of the formation of the International Hydrogenation Patents Company, representing a fusion of the patent interests of the Standard I.G. Company, the Royal Dutch Group, and Imperial Chemical Industries, Ltd. The I.G., it is stated, is at present hydrogenating brown coal tar in quantity, and is extending the process to include petroleum. Hydrogenation of crude benzole has also been established as a commercial refining progress, which reduces refining losses from 10 p.ct. to less than 1 p.ct. Reference is made to Bunte's endorsement of the recommendation of the German Association of Gas and Water Engineers that town gas should consist of a mixture of coal gas and water gas of from 470 to 480 B.Th.U. calorific value.

The "JOURNAL" is naturally the source of many references in the section by Mr. Hollings and Mr. Voss, who put forward the view that "bottled gas" is a possible method for the disposal of the gas obtained by low-temperature carbonization processes. The authors of this section refer to the opinion of A. Holmes that unsatisfactory attempts by gas manufacturers to define the required qualities of a gas oil for carburetting water gas have led to restrictions preventing, in some cases, the use of entirely satisfactory oils. The laboratory evaluation in small carburetting apparatus is slow. A simple method has been proposed for determining the carburetting value of gas oil, based on specific gravity, boiling point, and light dispersion.

* Annual Reports of the Society of Chemical Industry on the Progress of Applied Chemistry. Vol. XVI., 1931. Published by the Society of Chemical Industry, 46-47, Finsbury Square, London, E.C. 2. Price to members 7s. 6d., to non-members 12s. 6d.

THE NEWS OF THE WEEK

Insurance Against Electricity Breakdown has been taken by the Auchterarder Town Council to cover damage through breach of contract in consequence of accidental breakdown of the supply of electricity to Aytoun Hall.

North of England Gas Managers' Association.—The Annual Meeting of the Association will be held at the County Hotel, Newcastle, on Friday, May 6, at 2 p.m., when the following papers will be read: "The Sales Policy of a Small Gas Undertaking," by Mr. J. Corrigan, of Penrith; and "400 B.Th.U.?" by Mr. R. H. Duxbury, of South Bank.

British China Clay Association.—At a meeting held at St. Austell, Cornwall, on March 18, at which representatives of practically all the China Clay Producing Companies were present, it was unanimously decided immediately to form an Association representative of the British China Clay Producers. The primary object of the Association will be to enter into negotiations with the French National Association of China Clay Producers, in order to consider possible means of obviating the fixing of a quota by the French Government on the imports of china clay, which, it is understood, the French Government is contemplating doing.

Cookery Demonstrations and Competitions.—On Monday of last week Mrs. Sawdon, wife of Councillor A. Sawdon, J.P., Chairman of the Whitby Urban District Council, opened an exhibition of gas appliances staged by the Whitby Gas Company at the local Coliseum. Capt. R. Smailes, J.P., Chairman of the Company, presided, and supporting him were Councillor Sawdon, Mr. W. A. Oldfield (Director), and Mr. W. M. Galleway (Secretary and Manager). To stimulate interest in the cookery demonstrations given by Miss E. Eccles, C.D.S., two competitions were arranged—one for girls under sixteen, and one for adults. The exhibition, which closed last Friday, proved a great success.

The Maryborough (Queensland) Gas and Coke Company announce in their half-yearly report and balance-sheet a falling off of gas sales and residuals, as compared with the corresponding period of last year. A saving has, however, been effected in expenditure, as compared with 1930. After writing off £500 for depreciation, and making provision for all other charges, the profits amount to £1498. To this amount has to be added £103 brought forward from last half-year, making the total amount at credit of profit and loss account £1601. The Directors recommend payment of a dividend of 6 p.ct. per annum, amounting to £1237, leaving a balance of £364 to be carried forward to meet taxation.

Gas Floodlighting of an hotel in Leamington is a feature attracting much attention at the present time. Two systems of lighting are being tried. The lighting of the whole of the front of the building is being carried out by four strip lanterns, each containing twelve mantles, manufactured by Messrs. Foster & Pullen, Ltd. Alternatively projector lighting is effected by a lamp made by W. Parkinson & Co. In each instance the results are obtained at a modest cost, and the installations demonstrate what gas can do when burned in modern appliances. The proprietors of the hotel are paying a reasonable sum for the fixing and ultimate removal of the equipment, for the hire of the lamps, and for the gas used.

In View of Disparaging Statements having been made regarding the Gas Industry in the Southport Council Chamber, Councillor Scott, Chairman of the Gas Committee, stated that Southport had approximately 23,000 gas consumers, 10,762 of whom used gas for lighting purposes. As regards street lighting, over a hundred miles of road in Southport were illuminated by gas, from lamps varying in size from twelve burners down to one burner, while there were 84 high-pressure gas lamps installed. Far from gas being obsolete as an illuminant, the exact opposite was the truth. In spite of the fact that gas was handicapped by old enactments which had not yet been repealed, and which conferred favours upon their competitors which were denied them, they continued to make steady progress.

Paddington Station, of the Great Western Railway, was in darkness on March 17 owing to the fusing of an electric cable. Candles were provided in the booking-office for twenty minutes to enable business to be carried on. The public gas lamps in the thoroughfares adjacent gave their usual brilliancy.

Institution of Gas Engineers.

Short Gas Course for Teachers.

Among the Annual Short Courses for Teachers in Technical Colleges arranged by the Board of Education is one for a limited number of actual or intending teachers of Gas Engineering and Gas Supply and subsidiary subjects. The Course will be conducted by Mr. C. H. Creasey, H.M.I., a member of the Gas Education Committee of the Institution of Gas Engineers, at the Westminster Technical Institute, Vincent Square, London, S.W. 1, from Monday, July 4, to July 8, 1932, inclusive. No fee will be charged for the Course, and certain travelling expenses will be allowed by the Board.

Through the kindness of the Committee, hostel accommodation will be provided at the City and Guilds (Engineering) College, Exhibition Road, South Kensington, S.W. 7, at an inclusive charge of 6s. per day for bed and breakfast. Dinner can be obtained at the College.

The Course will include:

(*a*) Lectures and discussions on Methods of Teaching.
(*b*) Blackboard Drawing.
(*c*) Special lectures on subjects of interest to students of Gas Engineering and Gas Supply.
(*d*) Visit to Research Laboratories, &c., in London.

It is anticipated that a Lecture will be given by Prof. W. A. Bone, and two Lectures by Dr. J. W. T. Walsh, of the National Physical Laboratory, on "Outdoor Photometry."

Applications for admittance to the Course should be submitted to the Board of Education on Form 105U (T. i.) as soon as possible, and in any case before April 1, 1932. Forms of application, together with a pamphlet containing further particulars of the Course, can be obtained from the Secretary of the Institution of Gas Engineers, 28, Grosvenor Gardens, London, S.W. 1. A detailed programme will be issued to teachers who are notified by the Board that they have been selected for admittance to the Course.

Copies of the recently issued British Standard Specification for Dimensions and Properties of British Standard Channels and Beams for Structural Purposes (No. 4-1932) may be obtained, price 2s. each, including postage, from the Institution of Gas Engineers, 28, Grosvenor Gardens, London, S.W. 1.

Gas in Princess Elizabeth's Miniature House.

At the Greyfriars Hall, Cardiff, on March 16, the Duke and Duchess of York accepted, on behalf of Princess Elizabeth, the gift of a little house called "Y Bwthyn Bach," which was built in Cardiff, and the whole of the furnishings of which were presented by local Welsh people.

Unfortunately the house was very seriously damaged by fire as it was being transported to London on March 21 when it was near Monmouth. The thatched roof evidently became ignited by a spark from the engine which was drawing the house, and in spite of every effort to extinguish the flames, the roof was destroyed and the interior of the house badly charred. Such contents as there were with the lorry were badly damaged by water. Much of the contents had, however, been sent on to London in advance.

It is understood that the house was fully insured, to-

THE NEWS—continued.

gether with its contents, and Welsh workmen are to be employed day and night in restoring it. Mr. Morgan Wilmott, the Cardiff Architect who designed the house, which is a birthday present from the people of Wales to Princess Elizabeth, has stated that it can be restored without the slightest alteration from the original lines, and without the use of other than Welsh material.

As no house, miniature or otherwise, can be called complete without its gas equipment, the Cardiff Gas Light and Coke Company have seen to it that this is no exception. The kitchen is provided with a totally enamelled gas cooker and gas boiler, manufactured by Messrs. John Wright & Co., and presented by the Cardiff Gas Undertaking. In going over the house, the Duchess of York was very interested in the kitchen and its equipment, especially the gas cooker.

The miniature house is in no sense of the word a "doll's" house, for its thatched roof shelters a perfect home in miniature, replete with fittings and furnishings in every way similar to an adult's home, but built to the scale of a child of six years of age. It is 22 ft. long, 8 ft. wide, and 16 ft. high, and weighs about ten tons. It was for some time on show at the Building Trades Exhibition at the Greyfriars Hall, Cardiff, and a large gas unit, similar to those used recently in St. James's Park, was used for floodlighting the exterior.

"Missionaries of Smoke Abatement."

On Friday last Mr. C. S. Shapley, Engineer and General Manager of the Leeds Corporation Gas Department, suggested, in a speech as guest of the Leeds University Fuel Department, that the students of the Department ought to be, in word and deed, "missionaries of the cause of smoke abatement."

The dinner is an annual affair, and the proceedings are informal; it is re-union of old students, most of whom are now serving the Gas Industry in varied spheres, and it affords old students a pleasant opportunity of talking to one's former Professor and tutors and of meeting the "new blood" of the Department. That it is as virile as ever was evidenced last Friday, when the chair was taken by Prof. J. W. Cobb, the Livesey Professor.

The only toast of the evening was "The Fuel Department of Leeds University," which was in the hands of Mr. Shapley; and Mr. J. W. Wood replied on behalf of the staff, Dr. C. B. Marson, of the Northern Coke Research Committee, for the old students, and Mr. G. A. Thompson for the present students. Both Mr. Wood and Mr. Thompson referred to the unfailing and highly appreciated help so graciously extended to the Fuel Department by Mr. Shapley. The speeches were witty—which is not to say that they lacked wisdom—and all voted the evening a great success.

National Joint Industrial Council for the Gas Industry

Visit to Watson House

Sitting (left to right): Ald. T. Wooder, National Union of General and Municipal Workers; Ald. W. Devenay, J.P., Transport and General Workers' Union; Mr. A. Lewis, Transport and General Workers' Union; Mr. A. Basnett, National Union of General and Municipal Workers; Mr. A. Hayday, J.P., Employees' Secretary; Sir David Milne-Watson, LL.D., D.L.; Ald. C. W. Gascoigne, National Union of General and Municipal Workers; Councillor W. J. Harvey, D.L.; Mr. J. J. Richards, Transport and General Workers' Union; Councillor A. C. Edmonds, J.P., National Union of General and Municipal Workers; Mr. F. P. Tarratt, M.Inst.C.E.

Standing (left to right): Mr. W. J. Smith, Employers' Secretary; Mr. T. Hurley, National Union of General and Municipal Workers; Mr. W. S. Morland; Mr. J. E. Blundell, M.Inst.C.E.; Mr. J. R. H. Jacobs, F.C.I.S., F.S.A.A.; Mr. C. M. Scott; Mr. A. Dalgleish, Transport and General Workers' Union; Ald. Sir Albert Ball, J.P.; Mr. Duncan McKenzie, National Union of General and Municipal Workers; Mr. C. M. Plowman; Mr. T. Hardie, M.Inst.C.E.

The Constitution of the National Joint Industrial Council for the Gas Industry was approved at an Inaugural Meeting on April 30, 1919, and Sir David Milne-Watson and Mr. Will Thorne, M.P., who were then appointed Chairman and Vice-Chairman respectively, have continued to hold these offices ever since, to the great satisfaction of the Council.

The Thirteenth Annual Meeting was held on Wednesday, March 9, and at the invitation of the Chairman, several members of the Council paid a visit of inspection to the Research and Training Section of the Gas Light and Coke Company at Watson House.

The accompanying photograph is of the representatives of the Council who were present on this occasion.

The following representatives of the Council, including Mr. Will Thorne, who was engaged on Parliamentary business, were unable to proceed to Watson House:

Employers' Representatives.—Messrs. H. E. Bloor, B.Sc., B.Eng.; J. H. Canning, O.B.E., F.C.S.; Wm. Cash, F.C.A.; Sir Henry Wade Deacon, LL.D., J.P.; Messrs. Owen Evans; P. S. Hoyte, M.Inst.C.E., M.I.Mech.E.; George Keillor; S. S. Ogilvie; F. Prentice; R. Robertson; C. S. Shapley, M.I.Mech.E.; H. C. Smith, M.Inst.C.E.; S. Tagg, M.Inst.C.E., J.P.; Octavius Thomas; Henry Woodall, M.Inst.C.E.

Workpeople's Representatives.—Alderman S. Hall (National Amalgamated Union of Enginemen, Firemen, Mechanics, Motormen, and Electrical Workers); Mr. I. J. Hayward, L.C.C. (National Union of Enginemen, Firemen, Mechanics, and Electrical Workers); Mr. J. D. S. Highman (N.U.G. and M.W.); Mr. P. J. Tevenan (N.U.G. and M.W.); Mr. Will Thorne, C.B.E., M.P. (N.U.G. and M.W.); Councillor J. Williams, J.P. (N.U.G. and M.W.).

THE NEWS—continued.

Gas Burner Maintenance.

A comprehensive scheme for the maintenance of gas burners has been adopted by the Gas Committee of the Coventry City Council. The scheme provides for the introduction of burners of a standard type and their subsequent maintenance by the Corporation. One lighting burner of standard type is to be supplied free to every lighting consumer in the gas area, and to be fixed to an existing pendant or bracket, the consumer to purchase mantles and glassware if the existing materials are found unsuitable. Additional standard burners will be supplied and fixed at a cost slightly above cost price. The burners, after installation, are to be changed by the Corporation workmen about every four months, cleaned at the gas workshops, and then put into commission again.

At the outset six men would be needed to ensure a visit to each of the 22,000 lighting consumers within twelve months. At the end of the first six months a further six men would be needed so that repeat calls could be undertaken. The men engaged would receive general tuition in regard to gas appliances, so that they would be competent salesmen as well as workmen.

Street Lighting and Safety.

The National " Safety First " Association will be holding its annual conference this year in London from May 4 to 7, when a session will be devoted to a paper and discussion on " Street Lighting in Relation to Safety." The Association of Public Lighting Engineers has been asked to co-operate and furnish the introductory paper on this subject.

The day of meeting for this purpose has been arranged for the morning of May 5, and Mr. Harold Davies, Engineer and Manager of the Chesterfield Gas Department (President-Elect), has kindly undertaken to present the paper.

It is proposed to present this in the same manner as was adopted with the paper presented before the Public Works, Roads, and Transport Congress in November last—viz., by assembling information and ideas submitted by various members of the Association. The main object of the paper will be to demonstrate the value of good lighting in the interests of safety; but an effort will also be made to show how the provision of satisfactory public lighting is really a measure of economy, in preventing waste of effort, facilitating rapid passage of traffic or speedy transaction of business, &c., also matter dealing with accidents and their reduction and the arrangement of lights and signals desirable in the interests of public safety and convenience.

International Gas Union.

The Council of the Union Internationale de l'Industrie du Gaz met under the Presidency of Dipl.-Ing. F. Esher on Feb. 26 last in the Gas Conference Hall in Basle. The list of affiliated associations was submitted, the following thirteen nations being represented: Austria, Belgium, Czecho-Slovakia, France, Germany, Great Britain, Italy, Netherlands, Poland, Sweden, Switzerland, United States, and Yugo-Slavia. Notification was also given that the Executive had been completed as follows: *President*, F. Escher; *Vice-Presidents*, H. de Le Paulle (Belgium), Th. Keclik (Czecho-Slovakia), A. Baril (France), H. Müller (Germany), Harold E. Copp (Great Britain), M. Bohm (Italy), Clifford E. Paige (United States). *General Secretary*, P. Mougin. The Council then proceeded to ratify the decisions reached by the Executive at a meeting on Oct. 17 last.

The Next Congress.

The next Congress was arranged to take place during the first week in September, 1934, at Zurich. It will thus precede the meeting of the International Illumination Committee which is to be held immediately afterwards in Berlin. At the Congress the communications to be presented will be of two kinds. In the first place, reports prepared by a particular national association, but combining information furnished by the other affiliated national associations. Such reports will therefore comprise the collated opinions of the world of gas. The following phases will be dealt with: (1) Methods of Developing the Domestic Use of Gas (Great Britain), (2) Methods of Developing the Use of Gas in Industry, including hotels and catering (Belgium), (3) Tariffs (Czecho-Slovakia), (4) Co-ordinating the Methods of Testing Gas Apparatus and Certifying Same (France), (5) Co-ordination and Unification of Testing Gas Producing Plants, and Guarantees (Germany), (6) A Study Concerning International Gas Installations (the exact title will be announced later) (Switzerland).

Apart from these reports, a number of papers will be presented by eminent men in the Industry. These, of course, will be the work of the individuals concerned. All the reports and papers will be opened for discussion at the Congress, and rules will be drawn up in order that the discussions may be conducted in a rational manner and be of the greatest unity to all concerned.

South Yorkshire Coke Oven Gas Grid.

When addressing the proprietors at the annual meeting of the Sheffield Gas Company (reference to which will be found on another page), Col. H. K. Stephenson, D.S.O., the Chairman, made some outspoken remarks upon the subject of the Gas Grid Bill. They are extracted from the official reprint of the proceedings:

Great South Yorks. Gas Grid.

Now, having disposed of the accounts, I hope to your satisfaction, I am sure you will expect me to say something about the South Yorkshire Coke Oven Gas Grid.

When we met last March, your Board were in the throes of very difficult and delicate negotiations with South Yorkshire Local Authorities, as well as with the coke oven owners. These latter, as you may remember, had formed a Company under the style of the South Yorkshire Gas Grid Company, Ltd., and had promoted a Bill in Parliament to obtain the ownership of the Grid with powers to lay mains for the purpose of bringing coke oven gas into Sheffield. In other words they sought similar powers to those for which your Company were asking.

Both Bills obtained a second reading in the House of Commons, but before the Committee stage was reached, and after many conferences, a settlement was effected through the good offices of the Board of Trade, and the coke oven owners agreed to withdraw their Bill and support the application of your Company.

Result of Battle for Coke Oven Gas.

The Agreement with the coke oven owners—or, rather, with the South Yorkshire Gas Grid Company, Ltd.—provides that surplus gas shall be supplied to your Company's grid main from the various coke ovens through the medium of the Grid Company; and this agreement was included as a schedule to our Bill in Parliament.

When the Bill went before the Committee of the House of Commons, to which it had been referred, it was still hotly opposed by various local authorities owning gas undertakings—notably the Rotherham Corporation—on the question of the price to be paid by them for gas to be supplied by your Company from the grid and on their claim to have specific quantities of gas reserved for their possible future requirements at preferential prices.

A Matter of " Much Regret."

It always had been understood that the price of all gas supplied from the grid outside your Company's area of supply should include a contribution towards the capital cost of the grid, as otherwise the whole of this cost would have to be included in the price charged to Sheffield consumers—viz., our large steel companies. Your Board resisted both claims.

With much regret I am obliged at this point to refer to the unfriendly action of the Sheffield Chamber of Commerce, who, during the Committee stage, entered the lists against us on behalf of the Rotherham Corporation. Our Bill was, as I have mentioned, deposited in November, 1930, and the Chamber—through their Advisory Secretary, had announced in January, 1931, that they were not going to oppose it; nor was there ever any suggestion of hostility to the Bill.

Therefore, we were surprised to learn during the second week's proceedings before the Committee that the Sheffield Chamber of Commerce had voluntered to assist the Rotherham Corporation in its opposition by the provision of expert witnesses.

Secret Told by a Proof.

I may say that I saw " proof " of the evidence to be given by one of these witnesses containing the words, " He has been advising the Rotherham Corporation on the opposition to the Bill."

Throughout the presentation of your Company's case the representatives of the Chamber of Commerce actively prompted the opposing Counsel in their cross-examination of our witnesses. It was obvious to your Board and their advisers that the fact that the Sheffield Chamber of Commerce, purporting to represent Sheffield Industries, were

assisting Rotherham in their opposition, would seriously endanger the Bill.

Your Board, therefore, re-opened the negotiations with the Rotherham and other local authorities and obtained the withdrawal of their opposition on the best terms possible in the changed circumstances. Although our action probably saved the Bill, the terms we received were naturally far worse for your Company, and, therefore, for Sheffield industrial gas consumers whose battle for cheap gas we were fighting, than could have been obtained without fighting before the Chamber of Commerce intervened.

The principal clause which the action of the Chamber of Commerce obliged us to concede provides that your Company shall supply the Rotherham Corporation with coke oven gas at cost price *plus* one halfpenny per 1000 c.ft. This halfpenny is not, of course, nearly sufficient to cover the appropriate charges on the grid main.

Gives Rotherham a Preference.

As a result, the Rotherham Corporation can obtain supplies of coke oven gas on such preferential terms that they will be able to sell it to their industrial consumers at lower rates than your Company, whose price will now have to cover practically the whole cost of the grid.

Another result, scarcely less unfortunate, is that the quantity of gas available for Sheffield is liable to be seriously reduced. To this extent, therefore, the opposition of the Chamber of Commerce has deprived our City's industries of the cheap and plentiful supply of gas which our Bill was designed to give them.

No adequate explanation of this unprecedented episode has been forthcoming, nor has any regret been expressed by the Chamber of Commerce for the unfortunate results arising therefrom. Your Board, however, are determined to do the best they can in spite of these unforeseen difficulties.

Government Helped Sheffield.

Unlike the Chamber of Commerce, the Treasury and the Board of Trade have been most sympathetic and rendered us all the assistance in their power.

Your Board, since the passing of the Act, has given close attention to the question of the construction of the grid—the General Manager and his staff have done much preliminary work—orders are now being placed for the necessary materials, and it is hoped to begin the laying of the main at an early date.

The question of the price at which we shall be able to sell the gas from the grid main is also receiving the most careful consideration, but at this stage it is impossible to state an exact figure. Your Board recognizes that it must be as low as commercially possible.

THE FUEL FOR HOTEL COMFORT

A section of the very fine and extensive exhibit staged by the British Gas Light Company, Ltd., at the "Eastern Evening News" Homes Exhibition in Norwich, Feb. 24 to March 5.

At the "Eastern Evening News" Homes Exhibition in Norwich the British Gas Light Company, Ltd., had a large exhibit showing the development which has taken place in the construction of gas appliances for lighting, heating, cooking, water heating, and hotel purposes. We are indebted to Mr. C. Rhodes Armitage, Engineer and Manager of the Norwich Station, for the following description of the display and for the accompanying photograph of one section of the stand.

On the first section of the stand there was a model of appeal to hairdressers for shampooing purposes, and a number of small appliances for use over the kitchen sink or lavatory basin, in addition to the more powerful appliances intended to supply water throughout the building to any number of taps.

There was a model kitchen showing the latest type of all-enamelled gas cookers fitted with thermostatic control. The model sitting-room was tastefully arranged, and there could be seen the latest types of gas grates, together with a most interesting display of incandescent gas lighting entirely operated by switches.

There was also a display of gas operated vegetable steamers, roasting ovens, hot closets, and carving tables, and special appliances for producing boiling water for tea-making, complete with coffee making and milk heating machines. The whole of the front of the stand was lighted by high-pressure gas.

The Company were responsible for organizing cookery lectures and demonstrations, which were held twice daily during the run of the exhibition.

THE NEWS—*continued.*

Dover Gas Company Supper.

The Fourth Annual Supper, given by the Chairman and Directors of the Dover Gas Company to the staff and employees, was held at the Dover Institute on March 9, when Mr. E. M. Worsfold (Chairman of Directors) presided.

After the Loyal Toast had been honoured, the Chairman extended a welcome to Mr. Payne, the Co-Partnership Director on the Board of the South Metropolitan Gas Company, and Mr. Holden, the Assistant Secretary. He had much pleasure in asking Mr. Payne to propose the next toast.

Mr. J. D. Payne, proposing the toast of "The Dover Gas Company," said that he would like to congratulate the Dover Gas Company on the progress made during the last ten years. Their output had been increased by 57½ p.ct., which was a wonderful thing for a small works; it was a small works compared with the one to which he belonged. The dividends the Dover Gas Company paid were 8½ p.ct., compared with 6 p.ct. by his Company, and while the Dover Company paid a bonus of 6 p.ct. the South Metropolitan Company paid 4 p.ct. They were favoured to belong to such a Company. He wished to congratulate the Dover Gas Company and all those connected with it on the way they had carried on their business. He coupled the name of Mr. Worsfold, the Chairman, with that toast.

The Chairman, replying, said that the bonus for co-partners this year would be the same as the previous year, £1050. If they read the report of the annual meeting they would see that it had been a record year in the history of the Company, and he felt that the shareholders owed the success to the co-partners. If it had not been for the way they had worked together and striven to do their best no such result could have been obtained. They had 105 co-partners, and 81 of those were stockholders in the Company. He hoped that next year the balance of the 105 would be stockholders, so that they would have to take the Town Hall for their holders' meeting. A great deal of the success of the Company was due to Mr. George Anderson and Mr. Bruce Anderson and Mr. Paterson. They gave the Company the best of their expert knowledge.

Mr. W. R. Mowll (Director) proposed the toast of "The Town and Trade of Dover," to which the Deputy-Mayor (Councillor G. M. Norman) replied. The toast of "The Visitors" was proposed by Mr. E. Bradley, and replied to by Mr. A. S. Holden.

Mr. Bruce Anderson proposed the toast of his elder brother, and in doing so said that his brother had just celebrated his 73rd birthday, and it was a real joy for him to be associated with Dover.

Mr. George Anderson received a great ovation when he rose to reply. He thanked them for the way they had received the toast, and said he was pleased to see that co-partnership was turning out so well.

Gas Engines for Sewage Works.

The Highways and Sewage Committee of the Burnley Corporation has been considering the provision of alternative sources for the supply of electricity for the plant at the Duckpits and Wood End Sewage Disposal Works, and the comparative costs of electricity purchased direct from the Corporation's Electricity Department and generated by gas engines installed at the works.

The Committee has also under consideration a scheme of reconstruction of the above Sewage Disposal Works, where it is proposed to install additional plant for the treatment of sludge, whereby certain quantities of gas containing a very high percentage of methane would be produced which might be used for generating power. The major portion of this plant is operated by electric motors which must be kept running continuously night and day every day of the year.

After due consideration, the Committee have accepted the offer of the Gas Committee for the supply of coke oven gas delivered at the Sewage Works at the price recommended by the Gas Engineer, and this has been accepted and confirmed by the Town Council, with the approval of an estimated expenditure of the sum of £4650 for the installation of gas engines, dynamos, and auxiliary plant at the works for the purpose of generating the electricity required.

The total h.p. to be installed for immediate requirements is about 230, and as two additional units in the aeration plant are contemplated to be carried out at an early date, it is intended to make provision for a total of about 270 h.p.

After eliminating the consideration of the production of electricity by steam and oil engines, the choice rested between the town's electricity supply and gas engine generation. The considerations which influenced the Highways and Sewage Committees in their choice were:

(1) The cost at the switchboard would not exceed the price quoted by the Electrical Corporation Undertaking per kilowatt hour, including interest and sinking fund, labour, and maintenance charges;

(2) The hot water resulting from the cooling of the engines could be used immediately for the sludge digestion processes, with the inclusion also of the heat available from the exhaust gases; and

(3) At some future date a quantity of combustible gas produced from the sludge digestion could be utilized by the internal combustion engines to be installed.

An American Year Book of Merit.

A very fine production in the shape of the Annual Report and Year Book of the Consolidated Gas, Electric Light, and Power Company of Baltimore for 1931 has reached us from America, and it is a production on which the Company deserve congratulations. The publication draws attention in an interesting manner and with the aid of excellent illustrations to facts concerning the scope and activities of the Company which ordinarily are a closed book to the general public.

The first section of the Year Book is devoted to the report of the Board of Directors of the Company, together with a statement of accounts, for the year ended 1931. Following this, the work and achievements of the Company are comprehensively set forth. In the performance of its public service the Company has sought to become the community's most useful servant, and to accomplish this they have diligently sought new tasks. Year after year the Company have searched for new ways in which to make their services more convenient to their customers and their uses more profitable to them, and they consider that one way to obtain new customers is to assist in every way in quickening the pace of the industrial expansion and general growth of the community with its attendant increases in population and *per capita* wealth.

Particulars and a photograph are given of the gas manufacturing plant of the Consolidated Company at Spring Gardens, which sends out all the gas used by 197,725 consumers in Baltimore and adjacent territory. For many years the Company have purchased large quantities of bye-product coke oven gas from the Sparrows Point plant of the Bethlehem Steel Company, and this is piped twelve miles to Spring Gardens, where it is mixed with the gas manufactured there. The Spring Gardens Plant covers 55 acres, with deep water and rail facilities. The daily capacity of the plant is 76 million c.ft.

It is interesting to note that the Company's origin was in the founding of the Gas Light Company of Baltimore in 1816, so that the gas business of the undertaking is therefore almost 116 years old.

Gas Potential Investments.

[Extracted from the "Financial Times."]

Great Grimsby.

The Great Grimsby Gas Company was incorporated by Special Act in 1846, and its statutory area of supply covers some 82 square miles, comprising Grimsby, Scarthoe, Waltham, Immingham, Laceby, Healing, &c. For a number of years the operations of the undertaking have progressed, and with successive reductions in the price of gas dividends have reached their maximum rates.

Against capital expenditure about £24,000 has been written off by way of depreciation. The maximum dividend on the "A," "B," and "C" stocks is 10 p.ct. The seven-ten p.ct. standard £10 shares are subject to the usual sliding scale.

Under the Order of 1921 the standard price of gas was fixed at 12·8d. per therm, but this was reduced to 11·4d. under a new Order granted by the Board of Trade in December, 1930, when the sale price was lowered from 8·4d. to 8d. per therm.

Borrowing powers are equal to one-half the paid-up capital, but have not been exercised; as shown above, there are temporary loans, with accrued interest to the extent of £46,847.

Shrewsbury.

The Shrewsbury Gas Light Company was incorporated by Special Act in 1820, and supplies Shrewsbury, Bicton, Harlescott, and Meole Brace. The fixed statutory standard price of gas, 17·2d. per therm, and the ordinary dividends are subject to the usual sliding scale. Several price-reductions have been made from time to time, and the rate of dividend has accordingly been raised from 3 p.ct. in respect to 1920-21 to the present level of 6¾ p.ct.

Prices of gas per therm were: 1928, 11d. and 11·6d.; 1929,

THE NEWS—*continued.*

10·8d. and 11·4d.; 1930 and 1931, 10·6d. and 11·2d. The usual interim dividend of 2½ p.ct. was paid on March 1.

Under the Board of Trade's Special Order, dated March 20, 1931, sanction was accorded to increase the borrowing powers up to £117,500, and increased power was also given to purchase lands by agreement. In June last the loan capital outstanding was £68,298 by means of mortgages at an average of 5 p.ct. interest.

Tendring Hundred.

The Tendring Hundred Waterworks Company was incorporated by Special Act in 1844, and supplies water to Harwich, Walton-on-the-Naze, and Frinton-on-Sea, and gas in the last two named. The water undertaking in the Borough of Harwich may be purchased by the Corporation in 1940 or every tenth year thereafter.

Under the Company's Act, the fixed maximum price of gas is 19·6d. per therm, and the present price is 16d. Dividends are not subject to the usual sliding scale, but the rate has been gradually raised from 6 p.ct. in 1922 on the preferred ordinary and ordinary to the 8 p.ct. maximum in respect of 1931.

The balance brought into the current year is £13,528, or about sufficient to cover one year's dividend on the preference and at the maximum of 8 p.ct. on the preferred ordinary and ordinary shares as paid in respect of last year.

Tunbridge Wells.

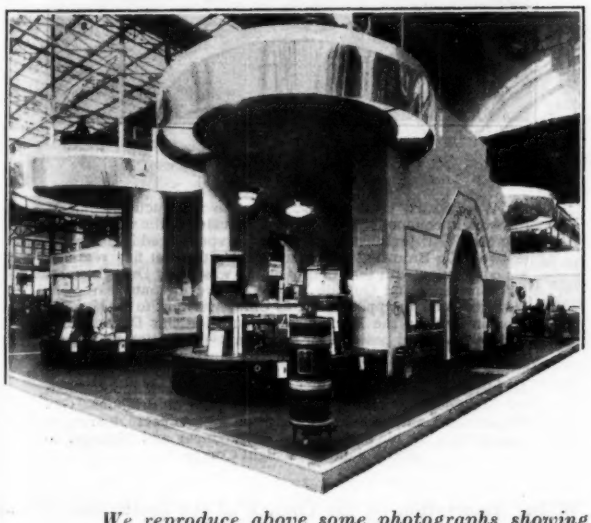
The Tunbridge Wells Gas Company was established in 1843, and incorporated by Special Act in 1864, further powers being obtained in subsequent years. In 1921 the gas undertaking of the Southborough Urban District Council was acquired, and as from the beginning of 1929 that of the Crowborough District Gas Company. The total statutory area of supply now measures about 100 square miles.

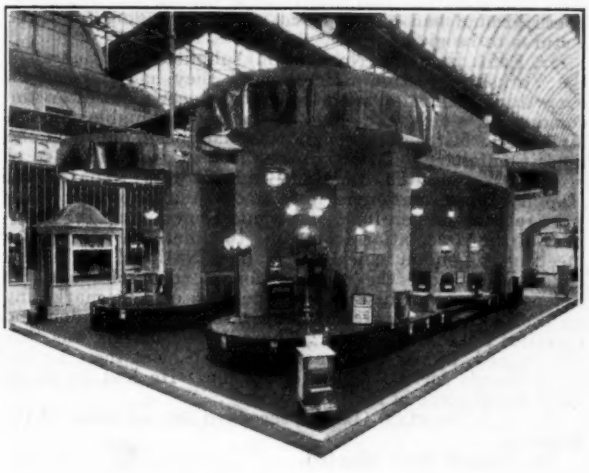
The standard price of gas is 16·2d. per therm, and the present price is 9d. Dividends are subject to the usual sliding scale. From Jan. 1, 1929, the 10 p.ct. standard ordinary, 7½ p.ct. standard "B," 7 p.ct. standard "C" and "D" stocks were converted into sliding scale and 5 p.ct. maximum stocks. Prior to conversion the dividends on these stocks were fractionally raised each year.

As the net dividends only require about £13,560, there is nearly enough in the carry-forward to cover two years' distributions. Against the capital expenditure shown, £6238 was written off in respect to depreciation of meters, stoves, &c., and £23,509 for plant displaced at Crowborough.

Sanction has just been accorded to the issue of £50,000 of debenture stock to provide for the expenditure incurred in the construction of the new gasholder completed and brought into service in December.

NEW NOTE IN GAS DISPLAY





We reproduce above some photographs showing the excellent stand of the South Metropolitan and South Suburban Gas Companies at the recent South London Exhibition at the Crystal Palace, described in detail last week. The stand, which undoubtedly strikes a new note in gas showmanship, is to remain up over Easter, although the remainder of the Exhibition closed last Saturday.

THE "JOURNAL" TECHNICAL RECORD

Which contains Reports of Meetings of Gas and Allied Associations

Manchester District Association of Gas Engineers

Presidential Address of Mr. C. W. Ward, of Wakefield

Annual Meeting, March 15

The 62nd Annual Meeting of the Manchester District Association of Gas Engineers was held on March 15 in the Midland Hotel, Manchester. The chair was taken by Mr. W. J. SMITH (Bolton), the immediate Past-President. He stated that the President, Col. Carr, was engaged in London on a Parliamentary Bill, and although he had made every effort to get free he had to be in London on that day. He deeply regretted that he was unable to attend the meeting.

INDUCTION OF NEW MEMBERS.

The CHAIRMAN announced the election of the following new members:

Messrs. D. J. Colvin, Engineer and Manager, Oswaldtwistle; M. Driver, Manager and Secretary, Drighlington; H. Fenton, Manager, Thornton Cleveleys, Blackpool; J. Stanier, Deputy-Engineer and Manager, Stockport; W. E. Plevin, B.Sc., Shift Engineer, Blackpool (Associate Member); W. A. Dearden, Engineer and Manager, Lancaster; J. H. Race, Engineer and Manager, Farnworth.

ANNUAL REPORT AND STATEMENT OF ACCOUNTS.

The Annual Report and Statement of Accounts were taken as read, and adopted.

The CHAIRMAN said Col. Carr had asked him very specially to thank Mr. Bridge on his behalf for the great help given to him during his year of office.

COMMERCIAL SECTIONS.

Mr. H. R. S. WILLIAMS (Altrincham) moved the adoption of the Report of the Lancashire Commercial Section. He said there was not much to comment upon. As usual the attendance was considerably lower than it ought to have been, but it was quite up to the average. The question of a coke scheme on the lines of the one operated by the London and Counties Coke Association had been under consideration at several meetings, but so far no decision had been come to. Negotiations were pending with Yorkshire and the Midlands to see if a joint scheme could be arranged. Another important point was the amended scheme which they had been endeavouring to get through for dealing with liquor, which would prevent to some extent the loss which most undertakings had experienced during the last year. Fresh ground had been opened up by arranging for three lectures to be given.

Mr. E. H. HUDSON (Normanton) submitted the Report of the Yorkshire Section. He thought they had touched on everything connected with the gas engineer's duties on the commercial side. They had lost a very valuable man in Mr. C. H. Mitchell (Leeds), who had been on the Coke Sales Committee. They had also lost the sound advice of Mr. E. J. Sutcliffe, of the Bradford Gas Department. Happily those gentlemen were not lost altogether. They were retiring on pensions, and would come among the members of the Association from time to time. He attended a meeting in London which was really a National Conference called to consider the organization of coke sales and the extension to other districts of a scheme of coke marketing on the lines of the agreement operated by the London and Counties Coke Association. The outcome of this was that they hoped, in the very near future, to meet their Lancashire friends for a friendly discussion. He had no doubt good would come of it.

Mr. C. S. SHAPLEY (Leeds) seconded the adoption of the Reports.

The Reports were adopted.

THE BENEVOLENT FUND.

The CHAIRMAN said the Committee had recommended that the sum of ten guineas be granted to the Benevolent Fund of the Institution of Gas Engineers. Col. Carr had asked him specially to stress this matter and to point out that, although since 1929 the members subscribing had increased from 518 to 720, the latter figure represented less than half the membership. Col. Carr and he himself were anxious for more members to subscribe individually, even if the sum was small. In the past the Association had voted as much as twenty guineas; but this year the balance-sheet did not permit them to give more than the ten guineas. Col. Carr hoped the members would try to make up the difference.

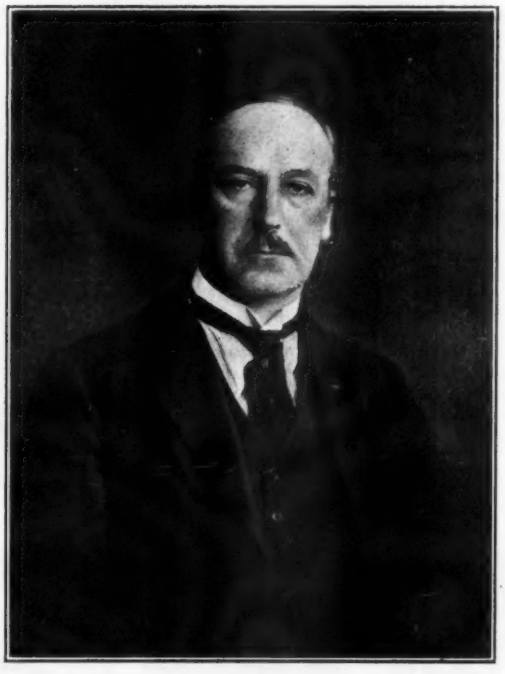
The recommendation was agreed to.

APPOINTMENT OF REPRESENTATIVES.

The Committee also recommended that Mr. C. W. Ward, Assoc.M.Inst.C.E. (Wakefield), be appointed representative of the Association on the Council of the Institution of Gas Engineers.

The recommendation was agreed to.

Messrs. W. Buckley (Manchester) and W. B. McLusky (Halifax) were appointed representatives of the Association



THE PRESIDENT,
C. W. WARD, Wakefield.

Mr. Ward's early years were spent on the constructional side of the work in connection with the Gas Industry in the works of the late Mr. W. J. Jenkins, of Retford, who specialized in the well-known "De Brouwer" patents. During the last five years of his connection with that Company, he was Chief Draughtsman for four years and Outside Representative for one year. He then accepted an appointment as Chief Assistant to the late Mr. Morton Fyffe in the Blackburn Corporation Gas Department, and he filled that position for four years—the latter two being under Mr. J. W. McLusky (now at Glasgow), who was appointed Engineer and General Manager at Blackburn in succession to Mr. Fyffe. Mr. Ward left Blackburn to accept an appointment as Engineer and Manager of the Borough of Brighouse Gas Department, and he held that position for four years, leaving in 1923 to take up his present post as Engineer and Manager to the Wakefield Gaslight Company.

on the Councils of the Lancashire and Yorkshire Junior Gas Associations respectively.

It was agreed that members of the Institution of Gas Engineers should be eligible for membership of the Association.

The meeting authorized the Committee to consider a scheme or schemes for increasing and extending the use of gas for industrial purposes, with the inauguration of an industrial gas research centre, whereby undertakings may receive expert advice on the various uses to which gas may be efficiently applied.

Mr. HUDSON moved the resolution, and it was seconded by Mr. SHAPLEY.

INDUCTION OF THE PRESIDENT-ELECT.

The CHAIRMAN said that, although he had not been closely associated with Mr. Ward in the Industry, he had watched his work in the Committee and observed his courtesy and the care with which he considered the matters that came before the Committee. He was sure the Association had done well in making the appointment.

Mr. WARD, in taking the chair, said he was conscious that he had received a great honour. He was aware that he had been preceded in the office by great men, and he would do his best to uphold the traditions they established. His first duty as President was to propose a vote of thanks to Col. Carr. It was a privilege to know Col. Carr, who brought to his Presidential duties an enthusiasm which was an inspiration to all.

PRESIDENTIAL ADDRESS

of Mr. C. W. WARD, Wakefield.

I should like to review the abnormal twelve months ended Dec. 31 last, because the conditions which prevailed had a distinct effect upon our Industry.

First consider the weather conditions. Only the first two or three weeks were normal, during which gas sales were generally up when compared with the same period in the preceding year. After this came a relatively warm spring, followed by a cold summer and warm autumn which extended right up to the end of December. All these conditions adversely affected the sale of gas, and I do not recall such a long period of adverse conditions. During the same period under review, trade reached a very low ebb coupled with a general shortage of money, which, too, has had its effect upon gas sales. Then in the same period we face a national financial crisis which caused a call from the Government for economy to be practised by all. When all these circumstances are taken into account I am really surprised that gas sales have maintained the level they have. There is as great a demand as ever for gas appliances, and in the case of the Company I serve it has made a record sale, which shows that, given good trade conditions and normal weather, sales will be more than maintained, because people have not bought appliances to look at only.

One of the chief efforts of the electricity industry—*i.e.*, the assisted wiring scheme—operated during the whole of last year, and I gather from reference that it has been the cause of some lighting in the better type of working-class houses being taken from the Gas Industry. This has happened in our own area, although I am pleased to report that quite a number have come back to us, one reason given being that the electric light is cold and does not air the clothes, which, as you know, are commonly hung near the ceiling of the kitchen. I am satisfied in my own mind that the revenue to our competitors will not pay for the outlay on such property.

THE ELECTRIC GRID.

Up to date, the total expenditure exceeds by many millions the amount estimated, and I hope those whose duty it is to look after our interests will do their utmost to see that the electricity industry carries its own burden and pays its way without the assistance of the overburdened taxpayer.

Experience shows that those who prepared the estimates in connection with the grid scheme were unduly optimistic. The same remark applies to their ideas of consumption, for we find that for the year 1930, instead of the 11,000 million units anticipated, only 9000 million were actually sold—that is, some 20 p.ct. more current should have been sold to meet the estimate. Per capita consumption was estimated to be (on the 25 p.ct. per annum increase basis) 302 units, but the actual consumption for the year was 202 units, or 30 p.ct. less than estimated. You will no doubt remember that the public only subscribed some 20 p.ct. towards the last issue of capital. That should be a warning to the Electricity Commissioners.

METHODS OF CHARGING FOR GAS.

Most works are in the position of being able to manufacture a much larger amount of gas than they do, and it would pay them to offer gas to large industrial consumers at a relatively low rate for special purposes, such as, for example, a twenty-four hour load. A number of gas engineers have adopted this system to their advantage, but one hears others declare that they want increased Parliamentary powers; to these I would suggest that they are not doing as much as their existing powers will allow, for much can be done by way of discounts and other methods without altering the basic price. We must, of course, give equal terms to all in like circumstances, but surely, under no scheme of pricing would it be desirable or business-like to do otherwise.

The recent introduction of the unit as a gas measurement will, I am sure, prove useful, but I would like to have fixed the gas unit as one of 3412 B.Th.U., this being the value of the electrical unit. I understand that the figure of 4000 was decided upon out of regard for the declared values of gas being gross values, but, to my mind, this is a question of efficiency, and this question of efficiency still must be taken into account when comparing relative costs of gas and electricity.

In Wakefield we have stated the cost of gas in terms of units on our gas accounts in addition to that of the therm, and I have heard many favourable comments made thereon. I should now like to see the therm as a unit of measure cease to be. It has never been properly understood by the majority of the public. I am well aware that the therm measure has been of service within the Industry as a uniform measure for reference purposes, but my local experience is that in the gas unit we have a measure easily understood by our consumers, whereas to-day I am yet asked, "What is a therm?"

COAL.

The Coal Mines Act has been in operation long enough to prove its iniquitous effects. I have personal knowledge of one instance where the manager of a gas undertaking was quoted a certain price, but afterwards he received intimation that, because the coal was for gas manufacture, the price would be increased by 2s. per ton. I think the time has now arrived when the coal producers should realize that to impose further hardships upon our Industry (which, like other industries, is feeling severely the effects of the economic situation) is not in their own interest. If the price of coal goes up, so will that of gas, with the result of decreased consumption, so the coal producer's output will be reduced accordingly, thus increasing his overhead charges per ton. I hope the present Government will profit by past experience and remove the political grip now upon the coal industry. Political interference with industry will benefit neither the producer nor the consumer in the long run.

There appears to be an effort, at any rate in our own area, to produce a cleaner coal, and this is all for the good. Wet and dry processes are used, but I prefer the dry on account of the sometimes excessive moisture content resulting from the former. I give herewith a representative number of valuations as we make them, which gives us a definite relative monetary value of the coals examined. You will notice that the ash content in the coke is again taken into account in our ultimate valuation of the coal. This is done in order that a coal having a high volatile content, yet possessing a high ash content, may not have too high a value given it, because we endeavour to keep the ash content as low as possible in order that we may produce a good coke. For example, I refer you to Samples Nos. 1, 3a, and 5, which clearly indicate my point. Columns B, C, and D show the relative effect of moisture and ash content on our valuations. [The table starts on the next page.]

RESIDUALS.

Concerning these, the outlook, to say the least, is not a happy one. Most of us know that coke is actually worth more than we are receiving for it. One of the reasons depressing our price for coke is that the steel industry is not taking anything like its normal requirements of furnace coke, and the coke oven industry is selling at ridiculously low figures, very much to the injury of gas undertakings who are unlucky enough to be in the neighbourhood of the ovens. As an instance I may state that in our own city I lost a consumer who had taken in the neighbourhood of 1000 tons annually from us, and our price, delivered into various parts of his establishment, was the low figure of 18s. 6d. per ton. Coke oven coke has been sold at less than 10s. per ton at the ovens, and I suggest that there is no reason why the two industries should not arrange a scheme for selling to their mutual advantage. Then again, the weather conditions to which I referred earlier in this ad-

Valuation of Coals.

No. of Colliery.	Description of Coal.	Appearance of Coal as Received.	Approximate Analysis.				Properties of Ash.	Plant Test Corrected to 60° Fahr. and 30 In. Bar.				
			H_2O.	V.M.	F.C.	Ash.		Total Sulphur.	Gas Yield per Ton.	B.Th.U. of Gas.	Therms per Ton.	Coke per Ton.
1	Unscreened coal containing large amount of fines	Soft, bright. About 80 p.ct. slack	2·4	25·2	57·4	11·0	Flocculent. No clinker	4·43	10,824	576	62·4	13·7
2	Screened gas coal	Much roof and dirt strata. No fines	2·4	28·0	58·4	11·2	Pink and white specks clinker	2·37	9,566	675	64·5	15·0
3a	Unscreened cobbles	Hard, with pieces of cannel. Fair amount dirty fines	2·0	30·0	57·4	10·6	Pink. Making clinker	2·81	10,393	533	55·39	13·5
3b	Screened cobbles	Do. No fines	2·8	32·0	60·4	4·8	Do.	1·2	10,841	650	70·7	13·5
4	Screened Haigh Moor gas coal	Soft, bright. Fair amount of smalls. Streaky coals	3·0	30·8	60·6	5·6	Pink. With clinker	3·21	11,872	600	71·23	13·75
5	Washed doubles	Dirty looking	6·0	30·0	54·0	10·0	Dark red clinker	..	9,300	560	52·0	14·0
6	Washed doubles. Gas nuts	Dirty grey. Very wet as received	6·8	31·6	56·2	5·4	Red clinker forming	4·34	10,081	560	56·45	13·5
7	Large gas nuts	Dry clean-looking doubles	2·0	34·0	61·4	2·6	Reddish brown, making clinker	1·81	11,200	648	72·50	12·5
8a	Washed peas	Very wet. Clean hard peas	10·0	29·6	56·8	3·6	Reddish brown clinker	1·85	11,135	604	67·2	13·0
8b	Screened gas coal	Large, with small percentage of fines. Roof adhering	2·8	31·0	57·6	8·6	Pale pink, little darker	..	10,415	596	62·1	13·25
9a	Washed singles	Small, 1 in. × ¾ in. Fairly clean nuts. Hard	3·6	29·8	59·2	7·4	Pink grey clinker	3·98	9,542	622	59·4	13·5
9b	Screened coal	Free from fines. Contains dirt strata	2·0	30·0	60·0	8·0	Do.	..	10,820	611	67·2	13·5
10a	Screened trebles	Clean, bright coal	2·0	30·6	63·4	4·0	Grey. No clinker	1·42	11,300	650	73·5	13·25
10b	Slack	Good slack. Fairly bright	3·4	29·6	51·0	16·0	Sandy pink, with white forming clinker	..	10,120	490	49·6	14·25
11	Screened large nuts	Large nuts. Bright, with a little roofing. No fines	3·0	31·8	59·1	6·1	Brown, with white pieces Little clinker	..	10,054	640	64·3	13·0
12	Screened singles	Dull looking nuts	3·4	33·0	62·0	1·6	Do.	..	11,290	660	74·5	13·0
13	Doubles. Dry cleaned	Very bright. Clean nuts	3·0	33·8	61·4	1·8	Sandy white clinker, but little	2·1	10,845	586	63·5	12·75

dress have militated in precisely a similar manner against coke sales as with gas.

Referring to the export trade, here again adverse conditions as to both weather and stocks have prevailed; consequently in December there was practically no demand from the Continent. I had hoped that when the value of sterling fell abroad we should derive a temporary benefit from export business, but Sweden went off the Gold Standard, thus depriving us of any money value advantage. All these factors must drive us to the conclusion that we must put a better coke on the market and not expect our customers to come to our works and load their vehicles themselves with wet ungraded coke as they have done in the past.

There is a growing demand for domestic coke—*i.e.*, broken and screened coke, about 2-in. average size. This business is worth cultivating and with the advent of the gas ignited coke fires, now selling readily, we should provide a good fuel suitable for the purpose. In this connection I can say from my own experience that it is a paying proposition, as we obtain about five shillings per ton more for this grade than for screened large coke. It has been my practice for a few years to break and screen our surplus coke made during the summer, and our accumulated stock has been sold out before the end of the winter. The local demand for broken coke is increasing. Incidentally, I will say that we take orders for as little as 1 cwt., and deliver with our own transport arrangements. The making of domestic coke involves the production of coke breeze; and this we wash, thus producing an excellent smithy breeze. By having suitable furnaces in the steam raising plant, the residual dust and fines provide an economical fuel.

It has been stated several times that if each gas consumer bought only half a ton of coke per year there would not be enough to go round. I repeat it because it points to the fact that with a good fuel made to suit customers' requirements there is a market awaiting development, particularly when there is now a strong movement in favour of smoke abatement. If further persuasion is required, then I will refer you to the many repeated appeals made by Dr. E. W. Smith for a better coke.

Tar is the next most valuable residual, but the returns from this have fallen considerably during the last few years. I believe one of the chief reasons for this decline is the fall in demand for creosote from the United States. I am sure that the distillers are sparing no effort to find fresh uses for this distillate and we sincerely hope their efforts will be rewarded to our mutual advantage. Another important factor is the unwarranted preference by many local authorities for bitumen preparations for road work.

Benzole.

Several gas undertakings are now abstracting benzole—and finding the process a paying one. Where the declared quality of the gas and process of manufacture are such that washing for benzole is practicable, then it should make a useful source of additional revenue, in addition to making at home some of that which we have perforce to obtain from overseas.

We have been investigating the possibilities of a particular process which, while being low in first cost and maintenance charges, produces a "once-run" benzole. At the same time it is claimed that objectionable gum forming hydrocarbons are removed from the gas, and these have a small commercial value. The plant is incorporated with the naphthalene washer and enables the wash oils to circulate constantly in the washer. Waste steam is used for distillation where available. On an existing installation it was found after six months' operations that the wash oil had only lost 2 p.ct. by volume and that its washing properties were still satisfactory. In our case it would appear that the first cost would be met by the saving

Valuation of Coals.

No. of Colliery.	Description of Coal.	Appearance of Coal as Received.	Quality of Coke.	A. Valuation. Gas at 2d. per Therm. Coke at 9d. per Cwt.	B. Gas Values. Deduct for Moisture.	C. Gas Values. Deduct for Ash and Moisture.	D. Coke Value. Deduct for Ash at 9d. per Cwt.	A − (C + D). Final Total Value of Coal.
				£ s. d.	s. d.	s. d.	s. d.	£ s. d.
1	Unscreened coal, containing large amount of fines	Soft, bright. About 80 p.ct. slack	Very good silver grey, well coked, nice looking	1 0 8	0 3	2 4	1 2½	0 17 1½
2	Screened gas coal	Much roof and dirt strata. No fines	Very good, well fused, large	1 2 9	0 4	1 8	1 5	0 19 8
3a	Unscreened cobbles	Hard, with pieces of cannel. Fair amount dirty fines	Well fused, shrunk, good looking	0 19 4½	0 2½	1 3½	1 2½	0 16 10½
3b	Screened cobbles	Do. No fines	Good silver grey	1 1 11	0 3½	1 0	0 7½	1 0 3½
4	Screened Haigh Moor gas coal	Soft, bright. Fair amount of smalls. Streaky coal	Well fused, good looking coke	1 2 2½	0 4½	1 1½	0 11	1 0 2
5	Washed doubles	Dirty looking	Fair	0 19 2	0 6	1 8	1 2½	0 16 3½
6	Washed doubles. Gas nuts	Dirty grey, very wet as received	Swells badly, tarry coke, well fused	0 19 6	0 6	1 3	0 7½	0 17 7½
7	Large gas nuts	Dry clean looking doubles.	Only fair, very friable, dark looking	1 1 5	0 2½	0 7	0 2	1 0 8
8a	Washed peas	Very wet. Clean hard peas	Well fused, good silver looking coke	1 1 0	1 2½	2 0½	0 3	0 18 8½
8b	Screened gas coal	Large, with small percentage of fines. Roof adhering	Do.	1 1 1	0 3½	1 3½	1 0	0 18 9½
9a	Washed singles	Small, 1 in. × ¾ in. Fairly clean nuts. Hard	Very good swells, silvery grey	1 0 0½	0 3½	1 2½	0 8½	0 18 1½
9b	Screened coal	Free from fines. Contains dirt strata	Do.	1 0 3	0 1½	1 3	1 0	0 18 0
10a	Screened trebles	Clean, bright coal	Very good hard silver grey	1 2 3	0 1½	0 9	0 6	1 1 0
10b	Slack	Good slack. Fairly bright	Do.	0 18 11	0 3	2 6	2 0	0 14 5
11	Screened large nuts	Large nuts. Bright, with a little roofing. No fines	Good looking, firm coke	1 0 7	0 2½	1 1½	0 9	0 18 8½
12	Screened singles	Dull looking nuts	Do.	1 2 3	0 3	0 7½	0 2½	1 1 5
13	Doubles. Dry cleaned	Very bright. Clean nuts	Only fair, friable, but clean	1 0 3	0 3	0 7	0 3	0 19 5

made in the amount of gas oil required for naphthalene extraction, apart from the profit from the sale of benzole recovered in the first two years. The process has shown at a certain works a benzole sale equivalent to a gas consumer using 11 million c.ft. per annum, paying rather more than 7d. per therm. By comparison, a plant suitable for our make would extract benzole equal to a 4 million per annum consumer of gas at 7d. per therm, the rate of benzole extraction in this case being half-a-gallon per ton of coal. Extraction at the rate of one gallon per ton of coal reduces the calorific value of the gas by about 2 p.ct.

Ammoniacal Liquor.

Conditions are such now that all I can say is it is a pity we cannot at present avoid producing ammoniacal liquor. Those of us who can dispose of it without cost are to be considered worthy of congratulation. It is not many years since when liquor returns equalled 3d. per 1000 c.ft. of gas made.

The fall in revenue from what we term "residuals" provides much food for thought, and whether we shall be able to reduce manufacturing costs still further remains to be seen. When we consider the relative thermal values of raw coal and the gas produced therefrom, there would appear to be a field for our scientists to investigate complete gasification.

It must be obvious to us all that nothing but the closest and most careful management is necessary at the present time, and that economy will have to be practised (but not to the detriment of efficiency) for some time to come. We all hope and think that trade generally will revive and we must see to it that we are in a position to take our share, but those undertakings which find it necessary to raise fresh capital should, before doing so, carefully consider the policy of amalgamation, or alternatively, of taking coke oven gas where favourably situated. Obviously, amalgamation should only be undertaken when conditions are such that overhead charges are reduced, combined with either a better service or a lower charge to the consumer, or both.

Service.

Undoubtedly there has been a great improvement during the last few years in our efforts to give our consumers the full advantage of the use of gas, but we must improve our service if we are to retain the position our possible service to the general public warrants. When it is remembered that in each town and city there is only one gas department as against a large number of private electricians, all of whom are strong advocates for electricity in addition to the efforts of the local electricity body, it is clear that our distribution and sales departments must be of the highest order. I consider that the public lighting gives us one of the best opportunities of advertising gas, and it should be the object of all to see that the most is made of it. The showroom is probably the next best medium between the undertaking and the public, and here an effort should be made to create a distinctive and good atmosphere. Money spent upon the appointments of the rooms is not wasted if one can create a feeling of pleasure in the customers due to an appeal to his personal tastes. A well-conducted and attractive showroom is in a great measure responsible for the public opinion of the status of our Industry.

The choice of canvassers is a matter of great importance, and only those who possess a happy disposition in any circumstances are suitable for this responsible work. In Wakefield I introduced some years ago two full-time canvassers, who inspect thoroughly our consumers' service and appliances, at the same time they make a record of the pressure, both when the appliances are in use and not. The information regarding pressures has been very instructive and has shown clearly where the mains required attention. The canvassers carry literature and prices, and have been the means of bringing a very acceptable amount of

business to the Company. Their work is recorded by a card system, and any work they find necessary in the course of their inspection is dealt with by our ordinary staff of fitters. The canvassers do no manual work. I am very pleased with the results of our maintenance scheme, and we get very few complaints indeed from our consumers.

Another experiment that I made proved so successful that it is still retained. I refer to the testing of meters *in situ*. When I tell you that in the last few years our unaccounted-for gas has been reduced to under 8 p.ct. from the figure of 13½ p.ct., and a considerable proportion of this saving is due to the meter scheme, you will agree that it has been worth while. The figure of 8 p.ct. unaccounted-for will appear to be high to some of you, but I must remind you that the whole of our area is in an extensively coal-mined district and broken mains and drawn joints are quite common occurrences due to subsidence.

Education.

The scheme was mooted in 1919, but the first examination was held in 1924, just eight years ago. Therefore one would have expected that last year the number of Diplomas taken should be approaching the maximum. Since only six were won, there appears to be insufficient interest taken by the younger men in the Industry, for there must be at least one hundred new entrants to the Industry annually. Up to the present we have only 37 students who have obtained the Diploma, and none of these is for Supply. I cannot help but think that this is nothing to be proud of, and I sincerely hope to see a rapid increase in the numbers taking the Diploma, and that Supply students will take their share, because it must be admitted that distribution to-day offers far more problems than in the past, and calls for men who have received an education quite equal to the standard attained by the works engineer.

I have always thought, and do so still, that the Diploma would have been of greater value to the recipient, and given him greater status too, if it was given solely by the Institution of Gas Engineers—that is, without the Board of Education's endorsement. From the first inception of the Scheme, I have always said that the Institution of Gas Engineers should set its own Examination papers in accordance with an approved syllabus, and that it should demand a certain standard of general education—say, Matriculation or Higher School Certificate—from a prospective junior. We should not then find it necessary to have recourse to the Board of Education. The Institution of Civil Engineers have worked on similar lines to this, and, after years of experience, it appears to work well. Such a scheme would have been far less cumbersome and more easily worked, for it is quite evident that the flow of students through the approved schools will be erratic in numbers, particularly in the major courses, thus causing local difficulties. I know many will not agree with me, but my feeling is that the Board of Education's endorsement plainly infers that before the holder of the Diploma took his course of study in the profession he had not received a good general education.

Industrial Load.

Thinking of our Education Scheme has led me to refer to gas for industrial purposes, and I am sure you will all agree that, if we are to be prepared to share in the general trade prosperity which will come some day, we should give careful thought to the matter. Col. Carr has, as you all know, been an ardent worker in this direction, and he has suggested many times the advisability of having an advisory station administered on up-to-date lines by experts having special knowledge of the subject. Such an establishment would be costly if run properly, but with joint financing by undertakings in the Manchester Association, the benefits to be derived would more than repay the initial and following costs.

The information we require, generally speaking, is:—

(1) What quantity of gas is required per pound of material treated?

(2) Are the gas appliances being used in such a manner as to obtain the best efficiencies obtainable?

(3) What is the best design of appliance for particular processes?

(4) Research work in connection with the possibilities of gas-heat treatment in processes not yet using gas.

With such information available we could intelligently survey our own local industries, very possibly to great advantage. It will be well carefully to consider such a scheme, because it appears to me that in the near future, even more than now, the designation Gas Engineer will imply possession of expert knowledge of application in addition to that of the manufacturing and selling of gas.

Description of Wakefield Gas-Works.

Hoping that all who find it possible will visit the Wakefield Works later in the year, I venture to give a general description of what you will see.

Our present retort house was built in 1900 and extended in 1908. The original foundation stone of the first retort house (built in 1822) is incorporated in the present one.

The carbonizing plant consisted of 12 settings of inclines after the extension, together with coal and coke handling plants. The running costs of this plant were very heavy, and when in 1925 I found that the retort house walls were breaking outwards, due to the expansion of the settings being transmitted by the floors thereto, we decided to take out seven of the inclined settings and replace with Drakes horizontal settings, six in number. At the same time, brick buttresses of substantial design were built up to the retort house walls, thus arresting and preventing further distortion. The new settings and the necessary operating floors were designed in such a manner that the settings are free to expand without affecting the building. In order that gas manufacture might proceed during the introduction of the new plant, we found it necessary to build a new chimney, which we coupled up to the remaining five settings of inclines. The horizontal retorts are built in settings of ten's arranged five tiers high, being 24-in. by 18-in. section, by 20 ft. long. Ascension pipes are arranged at both ends of the retorts, and the dip pipes are fitted with Simmond's anti-dip valves. New overhead coal hoppers, having a storage capacity of 42 hours' requirements, were put in with the new bench, but the old coal elevators and conveyors were retained in commission. The horizontal retorts are charged and discharged with a Drakes combined machine and, at the time of writing, I am pleased to say that not a single round has been missed.

We work two shifts each of eight hours, 6 a.m. to 2 p.m. and 6 p.m. to 2 a.m., but three retort house foremen are engaged in eight-hour shifts. The charges are left in the retorts twelve hours, and they average 15 cwt. of coal per charge. During the shifts the retorts are worked with an average pull of about half-a-tenth W.G., but, during the intervals between the shifts, they are subjected to a pressure of about one-quarter tenth. The pressure gauge is fixed at the level of the middle tier of retorts, thus indicating the average pressures effective in the retorts.

The quality of the gas from the horizontal bench averages 530 B.Th.U. gross, and we use blue water gas as a diluent to bring the quality down to 500 B.Th.U. gross, which is our declared value. By regulating the admission of water gas to suit the varying qualities of coal gas from the horizontal retorts, we are able to keep the gas for distribution within a narrow margin of 500 B.Th.U. gross. For example, I will give you the last four quarterly examiners' reports: 503·9, 502·8, 503·1, and 503·0. We find that by using blue water gas as a diluent to the rich coal gas, the resultant gas is reasonably low in inerts and is of fairly constant specific gravity.

The average time between decarbonizing the retorts during the last twelve months was eleven weeks per retort, and the total amount of carbon made was 20 tons during the year mentioned. The coke sold per ton of coal carbonized was 9·5 cwt., and in addition to this we sold to ourselves, for water gas making purposes, 0·8 cwt. per ton of coal used. During the year our make of gas averages 75·4 therms per ton of coal carbonized.

The water gas plant consists of two sets of twin generators, each set having a normal capacity of ¾ million c.ft. per diem. The process entails steaming down through one generator and up through the other, the fuel beds being of the shallow type. The generators are blown simultaneously. From this plant we obtain 50,000 c.ft. of gas of 300 B.Th.U. per ton of coke used. We use the gas oil from our naphthalene washer by injecting it along with the steam, and although there is no carburetting chamber in the plant, we find that we can successfully gasify the comparatively small quantity of oil we have for disposal. When using the wash oil, the gas made has a calorific value of about 340 B.Th.U. per c.ft. gross. The water gas plant is connected to a gasholder of 220,000 c.ft. capacity, and also directly to the foul main in the retort house after the governors. Consequently, by adjustment of the intercepting valve, the water gas is drawn in volume as desired into the foul main by the exhausters, and there mixes with the hot coal gas leaving the horizontals.

Our purification plant is of the ordinary arrangement. First the gas is cooled in air cooled condensers, followed by water cooled condensers, the warm water from which is used in the steam raising plant, thus utilizing the heat given up by the gas. The gas then passes through a tar extractor, followed by a Clapham washer, in which we use ammoniacal liquor of about 10-oz. strength. The liquor leaving the washer is never less than 16-oz. strength. This washing of mixed gas not only removes the bulk of the ammonia therefrom, but also removes about 80/100 grains

of sulphur per 100 c.ft. of gas passed, thus assisting our oxide purification plant. After the Clapham washer we use a Holmes scrubber, the first four chambers for the final removal of ammonia by water, and the last four chambers for the extraction of naphthalene by gas oil. Another 40 grains of sulphur per 100 c.ft. of gas is taken up with the water, and a further 40 grains per 100 c.ft. by the wash oil; thus, by washing for naphthalene before the oxide purifiers, assistance is given to the latter, at the inlet of which we have left only about 400 grains of sulphur per 100 c.ft., which agrees with the amount of sulphur in the spent oxide sold during the last two years.

Last year we used 14·3 p.ct. of water gas at a cost of 2·8d. per therm. In arriving at the cost I have included capital renewal and maintenance costs, also for labour, coke, fuel, and water for steam. The coke is priced at the lowest price received for it during the year.

The net cost of our coal gas, including coal (less residuals), works wages, and maintenance for the last year, worked out at 4·2d. per therm into the holders, and that of our mixed gas at 4d. per therm into the holders. In 1929 we installed a new holder of the frame guided type in a steel tank upon ground level, having a capacity of 1 million c.ft. This addition brought our effective storage up to just under 24 hours' reserve. Prior to the introduction of this holder we had rather less than 6 hours effective reserve, and upon several occasions we found ourselves in rather a tight corner. The inlet and outlet pipes to the new holder are carried up to a height well exceeding the level of the water in the tank; consequently, should a leakage occur in the stand pipes in the holder tank, water cannot pass into the district mains.

Distribution.

We serve six local authorities and have about 130 miles of mains of 2-in. and over. Some of these mains traverse unpopulated areas, and thus our quantity of gas sold per mile is comparatively low, being 2·67 million c.ft. per mile. Our total cost per 1000 c.ft. for distribution was 9·6d. last year, or 1·9d. per therm. This figure includes salaries of meter inspectors and repairs and renewals of mains, meters, and appliances. This figure may be comparatively high, but for the last few years we have been faced with heavy renewal costs.

Although the Wakefield City Council use electricity for lighting the main streets, the remainder of the City is lighted by gas. Of the remaining five outside areas, four use gas for lighting and one prefers the "outer darkness," having no artificial lighting at all. The standard lights consist of preheating burners, having two No. 2 inverted mantles in Sugg 16-in. "Windsor" lanterns.

We have a varied industrial load, including engineering, boiler making, woollen industry, wire works, railway works, &c.; and in order to cultivate this load, we have an industrial tariff, which I give hereunder:

Basic Price.—4s. 2d. per 1000 C.Ft.

	Furnaces.		Other Purposes.	
	Discounts.	Price per Unit.	Discounts.	Price per Unit.
	P.Ct.	d.	P.Ct.	d.
Up to 500,000 c.ft.	16	0·34	16	0·34
From 500,000 to 1,000,000 .	20	0·32	20	0·32
,, 1,000,000 ,, 2,000,000 .	28	0·29	20	0·32
,, 2,000,000 ,, 3,000,000 .	34	0·26	20	0·32
,, 3,000,000 ,, 6,000,000 .	40	0·24	24	0·30
,, 6,000,000 ,, 9,000,000 .	42	0·232	24	0·30
,, 9,000,000 ,, 12,000,000 .	44	0·224	24	0·30
,, 12,000,000 and over . .	46	0·216	24	0·30

Vote of Thanks.

Mr. Gibson moved a vote of thanks to the President for his Address. Mr. Ward had put before them many vital facts connected with the Gas Industry. A great deal of thought could be usefully given to the question of gas charges. Mr. Ward suggested they must give equal terms to all in like circumstances. He was afraid their competitors, the electricity people, did not follow that precept.

Mr. Shapley seconded the vote of thanks.

The President thanked the members. He added that he had received a message from his Chairman, who invited the members to meet in Wakefield during the summer.

Mr. C. R. Ingham (Brighouse) proposed a vote of thanks to the Committee and Officers of the Association for their hard work during the year.

Mr. R. Prince (Heywood), in seconding the resolution, remarked that the last twelve months had been abnormal. The Association owed a debt of gratitude to the gentlemen who had given unstintingly of their time and had safeguarded the Association and the Industry.

Mr. Bridge said the Committee had worked harmoniously together; they had all pulled their weight, and the Association had made progress. It was the third time he had responded to the vote of thanks, and he hoped to be spared to be their Secretary for a little longer.

Western Junior Gas Association.

A Meeting of the Association was held in the Offices of the Bristol Gas Company on Saturday, March 12, when Mr. J. H. Bingham, M.I.Mech.E., M.I.Chem.E. (of Messrs. George Glover & Co., Ltd., Chelsea), read a paper entitled "Dry Gas Meter Design." This paper followed on the lines of the author's contribution at a meeting of the Yorkshire Junior Gas Association last December—see "Journal" for Dec. 23 and 30, 1931.

Discussion.

The President (Mr. B. F. Harris, Trowbridge), in opening the discussion, mentioned that he was surprised that more use was not made of the direct reading index, which would be a great convenience to consumers. Was there any mechanical objection to it?

Mr. Bingham wondered how many consumers read their meters. In any case, there was no objection whatever to the use of a direct reading index. The device was quite an old idea, but the mechanisms in the early days were not reliable, a fault which was not found nowadays. This form of index was at present more expensive than the usual form, but meters could be fitted with it if desired by purchasers, at a small additional cost.

Mr. C. C. Brice (Bristol) asked what would be considered the permissible pressure absorption which would not unduly affect the length of life of a meter, or the correctness of the registration.

Mr. Bingham said that it was a difficult problem, as different makes of meters gave different pressure absorptions on test. In fixing a meter, it was advisable to see that the maximum requirements of the consumer would come within the capacity of the meter, which would not necessarily be its present designation. For instance, the safe working load of a 100-c.ft. high-capacity meter could be considerably more than 100 c.ft., particularly so if gas were the prescribed medium for testing purposes.

Mr. S. S. Lloyd (Weston-super-Mare), in asking for information regarding the stamping of gas fire prepayment meters, said that he understood there had been a refusal on the part of some of the official testers to stamp such meters. As far as he was aware, these meters were identical in construction with other types. Why should they not be stamped?

Mr. Bingham replied that he was aware that there had been a refusal to stamp these meters, but he thought that it applied only to meters fitted with turn-back arrangements.

Mr. W. M. Paterson (Bath) said that in connection with the use of air for official tests, it was obvious from the comparative figures given in the paper that so long as the existing meter ratings were used, the utilization of air was quite satisfactory. It made no difference as far as the actual registration was concerned, and the increase in the absorption loss was not sufficient at rated capacity to affect the test. If, however, a different rating system was introduced embodying some statement of "safe working load," when a meter would be tested at its actual, not its rated, capacity, gas would have to be used for testing.

Mr. Bingham agreed that this would be so.

Mr. D. L. Copp (Exeter) said that it was not reasonable for makers to say that a meter should never be used to its utmost capacity. In most instances the average load was well within the capacity of the meter, but for short periods of maximum demand the meter should be working "all out." If a motor salesman told him that a certain car must not on any consideration be driven "all out" he would refuse to buy it.

Mr. Bingham replied that a maker guaranteed a meter for five years, but had no control over the conditions in which it had to work, or the quality of gas it had to measure, and it was surely reasonable to ask for an assurance that it would not be asked to do work for which it was not suited.

Mr. A. Barrett (Frome) stated that it was a known fact that an old "lights" meter was capable of dealing with a considerable overload without unduly increasing the pressure absorption. Was this also the case with the modern high-capacity meter?

Mr. Bingham gave figures of tests on "lights," "standard," and "high-capacity" meters, showing that both the lights and high-capacity types will carry a higher percentage overload than the corresponding standard, and still keep within the prescribed 5/tenths pressure absorption. It was stated, however, that the test results quoted referred to one particular maker's meters only. In the absence of comparative test results on other makes, it would be difficult to say whether or not the deduction could be applied generally. The basic "lights" meters of different makes varied considerably in structural details, and it did not necessarily follow that in the evolution through the standard to the high-capacity each maker had given relatively proportionate increases to those details of construction which affect flow and pressure absorption.

Southern Association of Gas Engineers & Managers

Presidential Address of Mr. R. H. Ruthven, of Ramsgate

Annual General Meeting, March 18

The Annual General Meeting of the Association was held last Friday, at the Hotel Metropole, Northumberland Avenue, W.C., under the Presidency of Mr. R. H. Ruthven, of Ramsgate. The business was preceded by luncheon, at which the President was supported by the Mayor of Ramsgate (Alderman C. Nixon), the Chairman of the Gas Committee (Alderman J. S. G. Langley), Councillor S. S. Cutler, and Mr. F. C. Sale (Secretary to the Gas Department). The Town Clerk, Mr. H. G. Curtis, had hoped to be present, but was prevented by a business engagement. There were a number of distinguished visitors, and the attendance of members was very gratifying.

Mr. J. H. CORNISH, of Bridgwater, Vice-President of the Association, proposing the toast of "The Visitors," referred by name to some of the well-known gentlemen present, and expressed the particular satisfaction of the members at having with them so strong a contingent from Ramsgate to support their popular President on this occasion. Referring particularly to these visitors, Mr. Cornish remarked that they were all in office for the love of it, and honour was due to them for giving their services so ungrudgingly. Some of the older among those present would remember that Ramsgate used to have as Engineer and Manager a gentleman who was known throughout the Gas Industry—he referred to Mr. William A. McIntosh Valon. Mr. Valon's name would always be associated with a particular form of prepayment meter, and seeing the great amount of gas consumed through prepayment meters to-day, they had something to thank Ramsgate for in this respect. Personally he thought it would be fair to say that fully one-half of the gas consumed in Great Britain was now supplied through prepayment meters, and gas undertakings would have sorry balance-sheets if this item were deleted. If they took into account the average price, he thought the prepayment consumption would represent an income of about £25,000,000 a year. It was a special pleasure to have with them the civic representatives from Ramsgate, inasmuch as there were very few members of the Association who represented Corporation Gas Undertakings—probably not more than half-a-dozen in all.

AN INVITATION TO RAMSGATE.

The MAYOR OF RAMSGATE, replying on behalf of the visitors, said they appreciated very highly the kind words which Mr. Cornish had spoken, and the way in which the toast had been received. The Association had conferred a very great honour on the Ramsgate Gas Engineer in electing him President of the Association, and he (the speaker) and his colleagues were present that day to get just a little of the reflected glory. He could dilate for a considerable time on the good qualities of Mr. Ruthven. In Ramsgate they esteemed him very highly, and his election to the position of President showed that the Association esteemed him also. They had come from Ramsgate that day as visitors, but he hoped the next time they met the position would be reversed, and that the Association would be the visitors and the Ramsgate Corporation the hosts, for it was his great privilege to bring from his Corporation a very cordial invitation to the members of the Association to pay a visit to Ramsgate on July 1. At the Ramsgate Gas-Works, as they all knew, there had been put down the first installation of Woodall-Duckham intermittent vertical chambers in this country, and when the visitors came to Ramsgate they would have an opportunity of seeing what a wonderful change Mr. Ruthven had made in gas production during the time that he had been there. The Corporation would do their best to make them welcome on the occasion of their visit, and he felt sure that they would be interested, not only in the gas-works, but in the other great improvements that had been recently carried out with the idea of making Ramsgate still more attractive both as a residential and as a holiday resort. In six or seven years the Corporation had spent a quarter-of-a-million pounds in the extension of their famous front and magnificent walks, and on matters of like nature. The visitors would, he felt sure, be charmed with what they would see.

PROUD OF THE PRESIDENT.

The CHAIRMAN OF THE GAS COMMITTEE, submitting the toast of "The Southern Association," said he hoped that every member would accept the invitation which had just been extended. He himself had attended gas conferences on a good many occasions, and he had found that those present were the very best kind of men with whom he came in contact. He esteemed them highly. The Gas Committee and the Corporation of Ramsgate, as well as every burgess in the Borough, thought the world of Mr. Ruthven. They were very proud of him indeed. The new system of carbonizing which he had introduced at Ramsgate had turned out a great success. In conclusion, he trusted the Association would go ahead and prosper.

The PRESIDENT, replying to the toast, said it was forty years ago that Mr. Valon, to whom reference had been made by the Mayor, was President of the Incorporated Gas Institute, as it then was. In his work regarding the supply of gas on the prepayment system, and in other ways, the late Mr. Valon certainly did much good for the Industry—a fact which Ramsgate remembered with gratitude. He himself was a great admirer of Mr. Valon. Unfortunately he never met him, but he knew of his good works which lived after him. Ramsgate, he believed, was one of the first towns to be lighted by incandescent gas, and in other respects they were indebted to Mr. Valon. As to the Association the meetings were a distinct tonic. Whatever might be the subject under discussion, they found men who brought forward new viewpoints, and introduced a wider outlook on the problems which the Industry had to face. In a spirit of co-operation they could get their difficulties solved. They were pleased to think in Ramsgate that though they were the first to put lown Woodall-Duckham Intermittent Vertical Chambers in this country, their example had since been followed in other places.

THE PRESIDENT.

R. H. RUTHVEN, Ramsgate.

Mr. Ruthven was educated at the Kendal Grammar School, and was an articled pupil at the Kendal Corporation Gas, Water, and Electricity Department from Jan. 1, 1905, until Dec. 31, 1909. He then became Chemist and Draughtsman to the Ramsgate Corporation Gas and Water Department, a position he occupied from May, 1909, until September, 1916. In that year he was appointed Engineer and Manager to the Morecambe Corporation Gas Department. In January, 1922, he was appointed to his present post of Engineer and Manager to the Ramsgate Gas and Water Department.

BUSINESS MEETING.

THE LATE SIR ARTHUR DUCKHAM.

The PRESIDENT, at the opening of the subsequent business meeting, referred to the loss sustained by the death of Sir

Arthur Duckham. He said that many appreciations written by men who knew him had appeared in the Press. There were a number of members of the Association who had known him well, and to whom the news of his death had come as a very great shock. It gave them, indeed, a distinct feeling of personal loss. Sir Arthur Duckham was an Hon. Member of the Association, and whenever he rose to speak they knew they would hear something extremely interesting. They were, in fact, always delighted to hear him. To the Association his death would be a great loss, and in a wider sphere this loss would also be felt; for he was an outstanding figure in the Industry, which owed a great deal to him for his efforts. The country could ill-afford to lose his services, particularly at the present moment. The Association most sincerely offered their sympathy to those most closely concerned—Lady Duckham and the family, and those connected with Sir Arthur in his business.

As a mark of respect the members stood silently in their places.

The PRESIDENT then proposed, and it was agreed, that the minutes of the previous meeting as published in the "JOURNAL" should be taken as read and confirmed.

The Annual Report for 1931, as circulated to the members, was also taken as read, and adopted on the proposition of the PRESIDENT, seconded by Mr. H. C. SMITH (Tottenham).

NEW MEMBERS.

The following additions were made to the Membership Roll of the Association, on the motion of the PRESIDENT, seconded by the VICE-PRESIDENT:

Messrs. A. Herber, Gas Light and Coke Company; W. J. Kight, Swindon; A. D. Parkyns, Exeter; E. A. Smith, Eastbourne; W. A. Bishop, Croydon; R. Morton, St. Austell; D. B. Parkinson, British Gas Light Company; and T. H. Prater, Margate.

Thereafter the President was elected representative of the Association on the Council of the Institution of Gas Engineers for the ensuing year. This was proposed by the VICE-PRESIDENT, and seconded by Mr. R. J. H. CLARK (Plymouth).

PRESENTATION TO THE RETIRING PRESIDENT.

The PRESIDENT said he esteemed it a great privilege to present to the retiring President, Mr. H. C. Smith, a memento of his year of office. Mr. Smith was known extremely well to all present. His activities on behalf of the Industry were very wide. He had been President of the Eastern Counties Association, he was Hon. Secretary of their own Association for five years, and he had had a great deal to do with almost everything that concerned the Industry. If he tackled a job, it was always thoroughly well done. ["Hear, hear."] Quite recently he had been appointed Chairman of the Technical Committee of the London and Counties Coke Association, and he had had a great deal to do with the securing of the Royal Charter for the Institution. Further, he had had much to do with the alterations of the rules, where these alterations had to be made. His address last year created general interest. Mr. Smith's work in connection with the reduction of ash in coal, and the consequent effect on coke, would in the course of a very few years become standard practice, and they owed a debt of gratitude to him for pointing out that such results were possible. He asked Mr. Smith to accept a silver salver, with every possible good wish on the part of the Association.

Mr. H. C. SMITH said he had always appreciated that it was a very good idea to make a presentation of this kind, but he only now realized to the full what an extremely good idea it was. He thanked them all for the support they had given him during last year, and in this connection he would like particularly to acknowledge the assistance rendered by Mr. J. H. Donaldson, the Hon. Secretary, and to thank the Committee for the very full backing they gave him throughout his period of office.

PRESIDENTIAL ADDRESS

of Mr. R. H. RUTHVEN, Ramsgate.

It has been my privilege and pleasure to hear presented the Presidential Addresses of each of our Presidents since my appointment to Ramsgate in 1922.

From these addresses it would appear that a feeling of trepidation is not uncommon in approaching the position of President of the Southern Association of Gas Engineers and Managers, and not least—the Presidential Address. Such a feeling in my case can, therefore, be well understood. Surely there is some justification for such feelings. The Southern Association is the largest of our District Associations; it has traditions of long years of useful activity, and these activities have had a great influence on the technical development of our Industry. Great responsibility devolves, therefore, on the man who, for the time being, occupies the Presidential Chair, to see that if possible the traditions of the Association are maintained during his year of office.

I could not have faced such a responsibility relying on my own endeavours. I do so, however, relying on the enthusiasm, good-fellowship, and real feeling that our individual members have for the Association, the assistance I shall receive from my predecessor and our Hon. Secretary, and by no means least, the quiet background of my friends of the Ramsgate Corporation Gas Department.

I therefore thank you most sincerely for the great honour you have conferred on my Department and myself in electing me your President for 1932.

During the war Ramsgate suffered—I am sure—more heavily than any other town, the official number of air raids alone being 119, and the Gas Department suffered proportionately; the output of gas fell from 267 million c.ft. for the financial year ended March 31, 1914, to 143 million c.ft. for the year ended 1919.

The vicious circle of falling output and increasing prices had been in operation during these years, and it had been impossible apparently for anything material to be done to alter conditions. The position had definitely begun to improve, however, prior to my appointment in January, 1922.

With a net cost of gas amounting to 68d. per 1000 c.ft. sold—*i.e.*, all costs excluding income-tax and loan charges—it was obvious that no real progress could be made until the Department had been re-organized. Fig. 1 gives the volumes of gas sold from 1912 to 1932 and the net cost of gas from 1922 to 1932.

The carbonizing plant consisted of two houses, one containing 14 beds and the other 10 beds of 8 single-ended retorts operated by West's manual machinery, and heated by regenerator furnaces. The plant was not in good condition, and the work of rebuilding the whole of the retorts and re-conditioning the rest of the plant was put in hand at once. The result of this work is shown by a sharp fall in cost of gas.

Even working at best efficiency, however, modernization of the carbonizing plant was clearly indicated as a commercial proposition. The great difficulty lay in the site. We were unable to find a suitable lay-out for a modern horizontal installation, and we were unhappy in our minds about continuous verticals on account of the fact that we naturally draw our coal supplies by water from Durham to Ramsgate Harbour. Further, it seemed that we ought to be in the position of being able to carbonize Kent coal, if such coal could be offered on competitive conditions to Durham. The question of an entirely new site was not overlooked.

When, therefore, the Woodall-Duckham Company was able to offer an installation of intermittent vertical chambers the matter was looked into as closely as possible, and eventually a contract was entered into for the erection of 15 chambers, each of a capacity of 4·5 tons of coal per 24 hours—equivalent to an output of 4725 therms of 500 B.Th.U. gas at 70 therms per ton. Gas-making commenced in this plant in August, 1926. This was the first installation of Woodall-Duckham intermittent vertical chambers in this country, and I think it reflects great credit on this Company that from the day gas-making commenced the plant was not shut down for a single day until it was re-conditioned nearly five years later. Further, just prior to shutting down, it was still producing 70 therms per ton of 500 B.Th.U. gas—the guarantee figure—from a second-class Durham coal.

I do not propose to weary you with details of this plant, as in the first place they were given by me in a paper read at the Carbonizing Conference, held in Birmingham in February, 1928, and other similar installations have been so admirably described by members of our Association.

GAS OFFTAKES.

It is not suggested that the original installation was without fault in design. In the original design one gas offtake was provided—taken off the top of the chamber by means of special fireclay blocks at one end of the major axis. When carbonizing certain Durham coals—2·25 ton charges in ten hours with two hours subsequent steaming—considerable pressure developed at the bottom of the chamber at approximately the 6th to 7th hours of carbonization. This position is now provided for by means of an offtake at the bottom as well as the top. By means of a hydraulic seal this offtake comes into action when the pressure reaches a pre-determined point.

The effect of this offtake is clearly shown in fig. 2. Whereas, with the bottom offtake closed the pressure rises to approximately 7 in. at the 9th hour of carbonization, with the bottom offtake open the pressure does not exceed 1 in. water gauge. Apart from the increased yield of therms per ton of coal, due to the absence of pressure, this has had the effect of relieving the pressure on the bottom doors. These bottom doors are castings and cover

the whole section of the bottom of the chamber—8 ft. 1½ in. by 12¼ in. They are made gas-tight by means of a faced joint, the faces being brought together by eccentric fasteners. It was practically impossible to keep such a joint gas-tight against a pressure of 7 in. water gauge. Escaping gas burning at this point quickly caused the bottom castings to become exceedingly hot—to their detriment. Trouble on this score, in the modern installation, is now absent.

Whereas in the original design expansion of the refractories was allowed for by leaving room for expansion in all directions, in the present design the process is one of "closing up" to the correct dimensions.

There is a very big difference in principle, and in our No. 2 installation the whole plant came up to carbonizing temperatures in perfect shape, and without any visible sign of cracking at any point.

I have on previous occasions stressed the great flexibility of the intermittent vertical chamber system in reference to variation of output. In a comparatively small works it is an important point to be able to vary the output—by as much as 50 p.ct. if need be—by a few simple adjustments, the constancy of calorific value of the gas being maintained by variations in steaming.

I might mention that our declared calorific value is 500 B.Th.U. per c.ft., and the Official Examiners' quarterly returns for the past two years are as follows:

Last quarter,	1930	. . . . .	506·0
First	,, 1931	. . . . .	502·1
Second	,, 1931	. . . . .	505·8
Third	,, 1931	. . . . .	502·6
Fourth	,, 1931	. . . . .	503·0

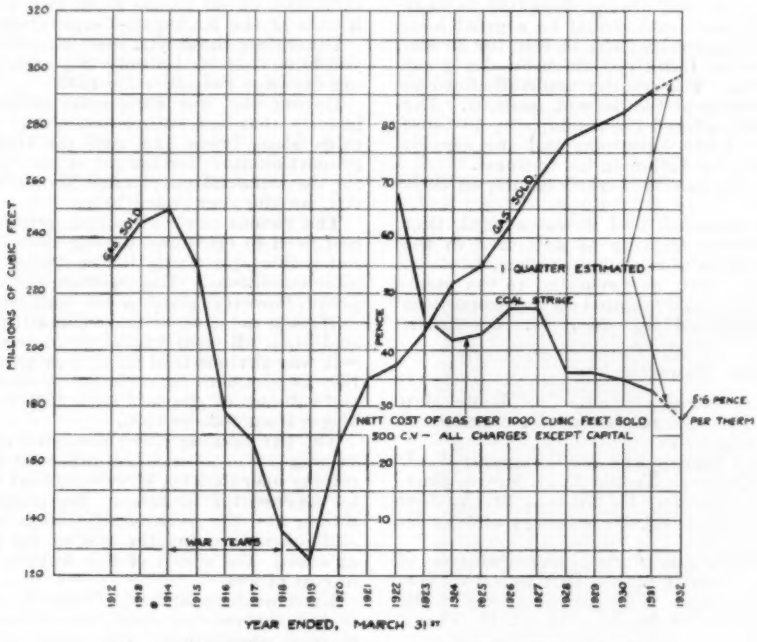


FIG. 1.—VOLUME OF GAS SOLD AND NET COST OF GAS.

Please do not read into my words that I consider the modern intermittent vertical chamber system is the one and only system for the efficient carbonization of coal. There are so many installations of machine-operated horizontals and continuous verticals giving such excellent results that to dogmatize would be foolish.

From the published results obtained from the intermittent vertical chambers at Wandsworth, Southall, Croydon, and Portsmouth, and possibly our own experience at Ramsgate since August, 1926, I do suggest, however, that there is now nothing of the experimental installation business about the system. Each case must be decided after taking all the local circumstances into account, but intermittent vertical chambers are definitely competitive with any system.

The one drawback to this system, to my mind, is the discharge and water quenching of the hot coke. It has been with great interest, therefore, that I have noted re-

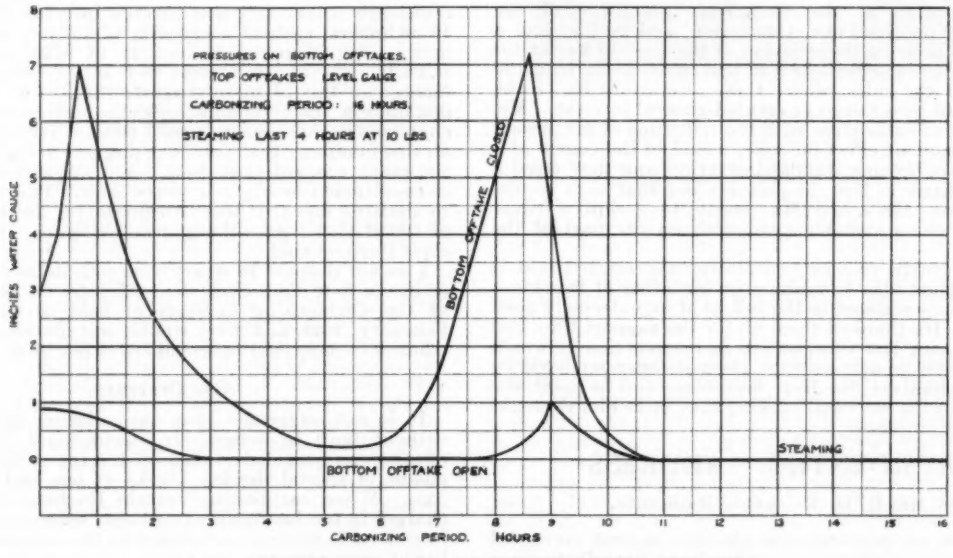


FIG. 2.—CURVES SHOWING EFFECT OF BOTTOM OFFTAKES.

cent Patent Specifications relating to intermittent vertical chambers, and in particular to the cooling of the coke before discharge. The discharge of dry-quenched coke from an intermittent chamber would be a great improvement.

The removal of quenched coke from the receiving hopper in the chamber house to the top of the coke screening and cutting plant is by means of an automatic skiphoist. In our case the capacity of this skip is 8 cwt. of coke. The skip when reaching the bottom of its travel opens the bottom door of the receiving hopper, allowing the skip to fill with coke. At the limit of travel the direction of the current in the armature coils of the driving motor is reversed, and the direction of travel of the skip is reversed. At the top of its travel the skip is tilted by a simple mechanical device and is held stationary for a period sufficiently long to allow the contained coke to be discharged. The direction of travel is again reversed and so on as long as required. Where speed of operation is not an essential factor this plant is admirable. It is low in capital cost, reliable in operation, and low in maintenance costs.

The coke from the skip hoist is passed in a regulated stream over a grizzly type screen, which passes all material under 2 in. direct to a rotary screen for further separation. All coke over 2 in. is passed either to the large coke hopper or the coke cutter as desired.

The rest of the new plant it has been necessary to install during the last few years, including exhausters, electricity generating plant, steam boilers, washing plant, &c., calls for no special comment, and will in any case, I hope, be inspected by you at a later date.

Bye-Products.

" It is not my intention to dwell on the general question of our bye-products; they are sufficiently discussed day by day. But let me make a remark or two in connection with the principal product—viz., coke—which is among the topics that interest companies, corporations, and the public alike, seeing that it has taken two generations to impress the public with the advantage to be derived from using this excellent fuel, not so much due to the stupidity of the public as to the indifference of the undertakings. The take-it-or-leave-it principle was displayed to perfection for half a century. What was not taken voluntarily by an unappreciative public was barged or carted away to regions unknown, at such prices as frequently to allow it to reappear in the same district, and enter into competition with the company from whom it was originally purchased.

" Many interesting circumstances have tended to end the indifference of companies and corporations to coke sales—(1) Competition in illuminants, hence more dependence on returns from products. (2) The lower maximum price allowed by Parliament in the larger number of cases where companies have applied for further powers, and therefore a better intelligence is shown in its sale, in preparing it for domestic use by passing it through a machine for breaking it, and by keeping its value as a fuel well before consumers through continued advertisements. There is one other point, however, which must not be overlooked—viz., the virtue ascribed to it by the public, who are influenced by press notices, that if a smokeless fuel such as coke, or coke assisted by gas, or gas alone could be brought into general favour and use, the nauseating fogs now so prevalent in most of our big cities (especially London) would be a thing of the past. And this is so. It may not prevent fog; that is from the nature of things impossible; but it may to a certain extent prevent its dreadful and sickening blackness."

The foregoing is a verbatim quotation from the Inaugural Address of Mr. W. A. McIntosh Valon, of Ramsgate, read to the Incorporated Gas Institute in June, 1892. You will observe that this is just 40 years ago.

The deduction is that the importance of preparing and grading gas coke according to the requirements of consumers was fully appreciated, and further, that the value of advertising coke was fully recognized in 1892.

It has taken 40 years, however, for an Association to be formed—namely, the London and Counties Coke Association—with the object of obtaining closer co-operation between producers of gas coke, and to co-ordinate effort in the direction of the preparation of coke, the design of coke-burning apparatus, advertising the advantages of coke as a smokeless fuel and advising customers as to its economical use.

The London and Counties Coke Association having been formed, it remains with the individual members to see that it furthers the objects of its promoters. No association or committee can carry its recommendations into effect in each individual area. It must rest with the individual to take advantage of the opportunities that are afforded him, and to see that he definitely pulls his weight in his own area.

The effects of receipts from coke has obviously a very important bearing on the price of gas, and we should surely make it our business to develop the sales of both gas and our principal bye-product—coke.

I do not think that even yet we have begun to realize the tremendously large market which exists for both gas and coke as a fuel, and I am quite certain that it cannot be too strongly stressed that in coke we have a very useful solid smokeless fuel, and that every means must be taken to present it to the public in the most useful form and at strictly competitive prices. It is bound to be the case that in other parts of the country the development of the London and Counties Coke Association is being watched very closely, and if its operations are proved to be successful our example will be imitated.

When this is the case the value of our Association will increase, as it will then be possible to avoid the dumping of coke from areas at present outside our control into our own areas. Further, as such Associations develop, the demand for coke will also develop, and the need for such dumping should disappear.

It should not be overlooked, of course, that other fuel suppliers view with very great envy the coke market that we have up to the present developed. We are in the position, therefore, not only of having to fight to maintain our existing market, but also to work strenuously to increase those markets.

The material that will best withstand such competition would have the lowest possible inert content, and be at least 95 p.ct. of the correct grade when received by the user; and perhaps, most important of all, the quality of deliveries must be consistent. Difficult problems of coal cleaning, quenching, cutting, and screening are involved, but the onus of solution must rest largely on us. Mr. H. C. Smith gave us last year particulars showing how low it is possible to reduce inerts.

We must constantly have in mind the ash content of coal deliveries and endeavour to frame our coal contracts so as to encourage or compel our suppliers to deliver coal as low in ash content as is possible. I do not think that a standard of 7 p.ct. inerts and 95 p.ct. correct grading should be very remote, and although entailing additional expense, would guard against the possibility of a new fuel succeeding, not because of its superiority to gas coke, but because of the lingering suspicion in the mind of the man in the street that the coke can never be more than coal with all the goodness taken out of it.

Works Management.

In connection with works management, there is another matter which is dealt with fully in Mr. Valon's address which may be of interest. That the manufacture of gas is a seven days per week job will be generally agreed, but to cause any workman to work seven days per week constantly is another matter.

Mr. Valon started a system at the Ramsgate Works, so long ago as his address, whereby we have a seventh man for every six shift workers. The result is that each shift worker has one day off each week, but, of course, a different day each week. I think you will agree that ethically the idea has much to commend it, and from the works point of view, in case of accident or sickness, there is always a man available to fill a vacancy.

The intermittent vertical chamber system of carbonization has been described as an important development in the manufacture of gas. In my view the combined naphthalene extraction and " Dri-Gas " plant is the most important recent advance bearing on gas distribution. Mr. Smith, in his address to you last year, referred to Mr. Harris's paper on the partial drying of gas, read in 1927. Mr. Smith added full information regarding the operation of a similar plant at the Tottenham Works, together with costs of operation. He further demonstrated the improbability of the temperature of the gas in the Tottenham distribution system ever being as low as the dew-point. It is the very great significance of this that I should like to stress.

There are miles and miles of cast-iron, steel, and wrought-iron mains and services in the distribution system of each of our undertakings. In the presence of ordinary moisture saturated gas, internal corrosion is taking place practically constantly.

Distribution costs are already very heavy. The renewal of mains and services becomes increasingly difficult and expensive as road engineers and surveyors have to make roads more and more expensive to cope with present day and possibly still heavier traffic in the future. Ought we not, then, to embrace any process which offers a reasonable chance of prolonging the life of our distribution system?

You know the cost involved in operating a plant designed to send out naphthalene free and partially dried gas, but can you estimate the credit value that would accrue if

internal corrosion of any distribution system could be definitely arrested?

Any acceptable theory of corrosion* must be capable of explaining three fundamental facts—namely,

(1) That iron will not rust in dry air, that is in the absence of moisture.

(2) That iron will not rust in moist air, provided the conditions of temperatures are such that liquid moisture will not condense on its surface.

(3) That iron will not rust in pure liquid water if air be completely excluded.

The position is then that if we can prevent liquid moisture from being deposited on the internal surfaces of our distribution systems then corrosion of such ferrous surfaces must cease; and to ensure this it must be the case that the dew-point of the gas in such mains and services is below the minimum temperature the gas will reach from the works to the point of use.

I am not concerned in the way this position is achieved; that is, whether the medium is calcium chloride or glycerine in a washer, or if by compression or refrigeration of the gas. The point is that it ought to be achieved, or so it seems to me.

In this connection may I refer to the most valuable work done by the "Life of Gas Meters" Research Committee, published in the *Transactions of the Institution of Gas Engineers*, commencing in 1918.

These reports deal very thoroughly with the causes of internal corrosion of mains and services, as well as the causes of deterioration of meters.

May I quote briefly from one of these reports:

"Dry air will not act on metallic iron at temperatures below 212° Fahr. Pure water, free of all dissolved air, is practically without action on iron. Internal corrosion may be brought about in at least six different ways, as shown. The first five are active in the presence of water vapour.

In the case of the sixth, water vapour is not necessary. They are classified here very much in the order of their destructive agencies:

In presence of water.
(1) By hydrocyanic acid.
(2) By products of interaction of carbon-bisulphide and ammonia.
(3) By excess oxygen.
(4) By carbon dioxide.
(5) By sulphur dioxide.
(6) By dry carbon monoxide acting on metallic iron."

The actions and inter-actions of these agencies are discussed in detail.

At Ramsgate a Holmes plant and process was adopted and commenced to work in May, 1929.

In passing I would like to say that the necessary correction in calorific value is made by the Official Gas Examiner, so that the Department is credited with the increased calorific value due to the extraction of the inert (so far as calorific value is concerned) surplus moisture content.

The number of complaints of defective supplies of gas from our 10,000 consumers is as follows:

Six Months.	Naphthalene.	Water.	Rust.
January to June, 1929	913	426	71
July to December, 1929	766	302	113
January to June, 1930	163	49	58
July to December, 1930	125	24	56
January to June, 1931	4	1	21
July to December, 1931	4	0	7

You will observe, therefore, that complaints from these causes are now almost unknown. I do not think there is any need for me to stress the value of this position from the point of view of service to the consumer.

Prior to the introduction of the "Dri-Gas" process, the possibility of resultant complications in the distribution system was not overlooked. The most likely of these seemed to be (1) the possibility of quantities of fine rust being carried forward by the gas, to be later deposited in services, meters, and the nipples of gas apparatus; and (2) the possibility of gummy deposits on the valves, &c., of gas meters.

Some two years prior to commencing to distribute partially dried gas, a small gas compressor had been installed for the purpose of atomizing paraffin into the distribution system to assist in reducing naphthalene trouble on the district. We decided to continue using this plant, but to substitute gas oil for paraffin; the idea being, of course, that this atomized oil should have a tendency to prevent the particles of rust from being carried forward, and further, that the gas oil would act as a solvent and so prevent the anticipated trouble with deposits on meter valve faces. Further, the oil might be expected to assist in keeping the meter leathers in good condition.

So far as rust troubles are concerned, the figures given indicate that we have had very little. We have found, in fact, when opening up cast-iron mains for various purposes, that the rust has dried out in the form of cakes, which, although causing friction to the passage of gas, cannot possibly be picked up and carried forward. We have not had the opportunity of seeing if this applies equally to steel mains.

* Pollitt, M. S. C. "The Causes and Prevention of Corrosion."

Inspection of Meters.

I make it a practice, at regular intervals, to inspect batches of meters when these are opened for repairs at the meter repair shops. There is no question that the condition of Ramsgate meters has steadily and progressively improved. This has been reflected in a substantial fall in the total cost of meter repairs per therm sold.

Still one further point before leaving this subject. It is generally the case that the "Dri-Gas" plant is fixed on the inlet to holders. It is the usual practice to provide a film of oil on the surface of the water inside the holder tank. (I am, of course, excluding the waterless holder.) We then have a condition inside the holder where it is improbable that the temperature of the gas falls below the dew-point, and if it does, any condensation will take place on an oily plate—the side plates of the holder will automatically oil themselves as the holder rises and falls. In point of fact, we cause our holders to fall, when conditions of supply and demand for gas are favourable, to ensure that this condition of the inside surfaces of our holders does exist.

I hold the opinion that such a position is a factor having a bearing on the life of a gasholder, and should be taken into account and have an effect on the premiums required for gasholder insurances. The *external* condition of our holders ought to be well-known to us all, oiling of rollers and general maintenance being a mere routine job.

At the risk of fatiguing you on this problem of corrosion, I must refer briefly to the external corrosion of mains and services. I think that the Wrought-Iron Tubing Committee, in collaboration with the tube manufacturers, has placed at our disposal a coated and wrapped tube which, if due care is taken in laying, should have a very long life.

In the paper, "Some Phases of Corrosion," which I had the privilege of reading to you in 1926, reference was made to the graphitization of cast-iron mains which, it was suggested, is more common than is generally supposed to be the case. This opinion has been confirmed on a number of occasions since. In the case of a steel main its life largely depends on the external coating and wrapping, which is the standard practice of the manufacturers. Up to the present I have been unable to obtain cast-iron mains coated and wrapped in exactly the same way. I heartily wish they were available.

The technique of gas manufacture has reached a certain degree of efficiency. In my own case I am quite conscious there is room for much higher efficiency, and no effort will be spared to see that the downward trend of cost of gas into holder is continued. But I speak relatively, comparing the technique of manufacture with that of distribution and salesmanship. In some measure it is comforting to find our National Organizations envied by our rivals. It is the case that we are extremely fortunate in these organizations. We owe a great debt to those leaders of our Industry who give so much of their valuable time to solving the problems that confront us.

Perhaps, however, we have learnt by this time that we must also rely on our own efforts to maintain and increase our business. We must, of course, continue to use every means in our power to see that we have at least a fair chance of securing business; but to repeat, such competition needs to be met not only by protesting against partiality shown by succeeding Governments and Public Bodies to the prejudice of our Industry, but by using to the full the powers and advantages we already possess.

A review of the position reveals many very strong points that have existed for so long that their value is scarcely appreciated. For example, there are very few houses or factories where a supply of gas is not already laid on, and we are, therefore, already in contact with our customer.

Strenuous competition has already proved to be of great value to our Industry. This is obvious, I think, from the great progress that has been made during the past decade. Gas appliances now available have improved in efficiency and appearance to something approaching perfection. Where the consumer is concerned, however, the availability of suitable appliances is but one step in the right direction.

The Gas Regulation Act practically ensures constancy of the heating value of gas. Even pressure is the next point which will have to be ensured. Constancy of specific

gravity is harder of attainment, especially where water-gas is used intermittently, or where wide variations occur in steaming of vertical retorts. A simple means of regulating the specific gravity of the gas under varying conditions would be of great service to the Industry.

The degree of unenlightenment—may I call it—of the majority of our customers regarding the regulation and control of gas appliances, beyond turning on the tap, may easily be under-estimated. It is vitally necessary, therefore, either that apparatus should need no adjustment or that such adjustment should be left entirely to the gas undertakings. Hence the importance of maintenance schemes.

The value of competent salesmen possessing the necessary technical knowledge and tact to deal with the many problems of the consumer is becoming more generally recognized. A representative of this type soon becomes a diffuser of confidence between buyer and seller, and a medium by which the seller expresses his interest and concern in the problems of the consumer from the consumer's point of view.

I am fully alive to the fact that there is nothing in the least original in the suggestion that we should concern ourselves with the consumer's point of view. In fact, last summer I heard the headmaster of a public school, in his "Speech Day" address, state that his slogan was "Service." If the ideal of "Service" is beginning to penetrate business to such an extent, I think we must realize that in our business "*Better and still better Service*" must be our slogan.

Gas Unaccounted For.

May I assume that we are all equally anxious to account for the maximum possible percentage of the gas we manufacture. Yet there are considerable variations in the published results of gas undertakings, and at first sight it would seem that in this matter of gas unaccounted for there is room for strenuous work, with the possibility of an adequate return on the expenditure involved.

The initial difficulty is, however, the absence of a reliable criterion. The *actual* figure for gas unaccounted for must first be arrived at before comparisons can be made, and this is not possible until gas unaccounted for is measured by a common unit. Is it not time that some standard formula should be agreed and adopted by us?

Correction of gas made as registered by the station meter to normal temperature and pressure *plus* added holder pressure is straightforward, and I think sufficient information is available regarding the general relationship between mean atmospheric temperatures and the temperatures of gas at the consumers' meters, speaking for the south of England. There is the additional correction that should be made in the case of gas undertakings distributing partially dried gas. Taking the case of gas distributed with a dew-point of 37° Fahr., the aqueous vapour content is 0·74 p.ct. of the total volume. With the dew-point at 60° Fahr. the volume is 1·73 p.ct., a difference of 0·99 p.ct. I suggest that the volume of gas represented by this figure would be "accounted for" and should not be shown as "unaccounted for." If something could be done in this matter I am sure it would be most useful to a great number of us.

May I refer to the wealth of technical information that is made available for us by all the investigators in our own and allied industries. The total amount of work represented must be stupendous. These papers are beautifully reprinted, complete with charts, photographs, and so on by our splendid Technical Press. We do our best, perhaps, to avoid losing sight of some of the information by filing extracts. For a number of years the "Journal" published "The Gas Chemists' Summary," by Mr. H. V. Hendrickson. In an admirable manner Mr. Hendrickson summarized the technical papers published during the year. A glance from the index to the Summary and the information required was to hand—as a rule. Is it not possible to revive the idea?

I am a confirmed optimist as to the future of the Industry, provided that we are collectively and individually prepared to give our customers the service we should ourselves expect; that we grasp our opportunities firmly as they are presented, and if we pursue to the limit the policy of co-operation and mutual assistance.

Vote of Thanks to the President.

Sir Francis Goodenough proposed a hearty vote of thanks to the President for his most admirable address. Mr. Ruthven, he remarked, concluded by saying he was proud of being a member of the Gas Industry. They of the Gas Industry were certainly proud of Mr. Ruthven. He would like to condole with the Gas Department of Ramsgate. Anyone who knew Mr. Ruthven and had listened to his address that day could have no doubt that it would not be many years before he left Ramsgate for some larger sphere, in which his abilities could display themselves to the full. When that day arrived, he was sure Ramsgate would wish Mr. Ruthven "God Speed," although they would regret his departure. It was always a pleasure to hear the master deal with matters of which he was master, and this was a pleasure they had had that afternoon. He would like to say how much he appreciated, as one interested particularly in the consumer's side of the business, the figures which the President had quoted as the result of his introduction of the dry gas process at Ramsgate. To have reduced the complaints from four a day to less than one in four weeks was an achievement earnestly to be desired by everyone having to deal with the consumer in any gas undertaking's district. It had made life much easier for the staff in Ramsgate. Mr. Ruthven had expressed the creed of the gas salesman in very fine and clear language. Studying the problems of the consumer from the consumer's point of view summed up the main task of the gas sales manager who meant to secure the best possible results for his undertaking. The salesman or the sales manager who looked at his business through the consumer's eyes would always have the best returns to show his shareholders or corporation gas committee. It was the bed-rock of efficient salesmanship. Better and still better service was only another phase of studying the consumer. The fundamental requirement for success in business was the securing of the goodwill and the satisfaction of the customer. During the reading of the address, the thought passed through his (the speaker's) mind, which the President subsequently expressed—that it was a pity they did not have a proper abstract of the technical and commercial papers published each year for reference and guidance, not only of present engineers and managers, but also of future generations of students who would come along. This would make quite clear the new points brought out in all the papers presented. If some really competent person in the Institution or on the Technical Press would have it as his duty to compile each year a brief *précis* of the outstanding points of papers presented, he felt very great service would be rendered to the Industry.

Mr. P. G. G. Moon (Bournemouth), who seconded the vote, said they owed a very considerable debt of gratitude to their President for the useful and interesting address he had given them—an address which he thought they would all agree was marked not only by the quality of its matter, but by its modesty of presentation. ["Hear, hear."] He thought that this of itself was an indication of the type and value of the man they had as President. It was usually the man who knew very well what he was talking about who talked about it very modestly. In Mr. Ruthven they were fortunate in having a man of that "between age" when enthusiasm remained and when the judgment born of experience had arrived.

The President, acknowledging the vote (which was carried by acclamation), said it was a tremendous relief to know that the time which he had devoted to the address had not been entirely wasted.

"Turbine" Furnaces.

It is encouraging to know that there are firms in England which, far from suffering from the world depression, have throughout the last two years steadily increased their trade until now they are working at top pressure, and hardly a day goes by but that new orders come in. Yet this is the fortunate position of the Turbine Furnace Company.

Specializing in the production of furnaces that give a very high steam pressure on cheap, low-grade fuels and waste-products which one would consider almost useless, this firm have found a ready market among those industries which depend for their manufacturing power on a steady steam-pressure output.

Furnaces do not sell by the hundred, yet nearly every day orders come in for "Turbine" furnaces.

Recently two important firms in Chile, users of "Turbine" furnaces, the one for 8 months, and the other for 6½ years, wrote in to express their appreciation; and in either case the remarks were exactly the same—ease of installation, ease of handling, economy of fuel (frequently a saving of as much as 50 p.ct. on the fuel bill), absence of necessity for renewals of any part, and the almost complete elimination of smoke and soot.

To quote from the letter from Messrs. Gray & Sinclair, Ltd., Quillota, Chile: "The furnace was installed some 6½ years ago, and since then has worked continuously in the boiler. During this period there have been no repairs needed or replacements of grate bars, which are now in excellent condition. Some 6 months ago we changed over from coal screenings to coke breeze, and although we used more of the latter for the same steam raising we are able to effect an economy of 30 p.ct. in the fuel owing to the cheaper cost of the coke breeze."

The European Gas Company, Limited

Annual General Meeting

The Annual General Meeting of the Company was held on Tuesday, March 8th, in the Middlesex Room of the Great Eastern Hotel, London, E.C. The Chair was taken by Dr. CHARLES CARPENTER, C.B.E., Chairman of Directors.

The GENERAL MANAGER AND SECRETARY having read the Notice convening the Meeting, and the Auditors' Certificate, it was agreed that the Report and Audited Accounts be taken as read.

The CHAIRMAN then spoke as follows: I think that at the outset it would be as well if by way of introduction I reminded you of the purpose for which this Company exists. It was formed to carry on the business of the manufacture and supply of gas in different towns of France under terminable concessions granted by their municipal authorities, and the prolongation of the Company's life is bound up necessarily with the prolongation of those concessions. The first and cardinal point in the policy of your Board has therefore been the maintenance of good relations with those municipalities, based upon a sincere attempt to carry out both in the letter and the spirit their obligations as concessionnaires of public services. Successive Boards of Directors have, therefore, regarded it as their duty to consolidate the position of the Company in the interests primarily of the investor seeking a more or less permanent investment in a high-class security. They have, in fact, considered the Company's business as comparable to that of the English public utility companies, and have in consequence always adopted a cautious and even conservative attitude in the matter of finance. It has always been the desire of the Board to extend our concessions whenever possible, and I think I might remind you, as has been done probably on earlier occasions, that the following concessions carrying out that policy have been obtained since the war: In Bolbec until 1970, in Boulogne until 1950, in Caen until 1956, in Havre until 1970, in Nantes until 1978, and in Sotteville until 1964.

At the same time the Board have considered it advantageous to obtain extensions of the concessions in the surrounding communes, in order that the Company may benefit by the development and progress which generally takes place in the neighbourhood of large towns, and, with this object, in addition to extensions of existing concessions, new ones have been obtained since the war for the supply of gas to various communes, and the areas covered by the Company's mains are now very considerable. Some idea of the extensions carried out, though not of the area supplied, is gained from the fact that the length of mains, which before the war was 952 kilometres, is now 1255, an increase of nearly one-third.

I have from time to time at previous meetings informed you what steps we have taken to improve our general organization, and I would remind you that since the war we have overhauled and brought our works up to a higher technical standard of efficiency. That was necessary not only as a result of the operations of the war, but also to bring our various stations into line with what we regard as modern practice today. We have carried out at the same time a great deal of work on the repair and replacement of mains with a view to reducing our high figure of leakage, which is still, however, I am sorry to say, the weak point of our distribution system. We have made a commencement with the organization on present-day lines of commercial services for the development of the sale of gas. We have made satisfactory progress in extending the use of gas for industrial purposes, and finally we have re-modelled our accounting system, and introduced—not less important—methods of technical, as well as financial, control which have already led to improved working results. Finally, with your approval, we have endeavoured to create reserves such as would obviate undesirable fluctuations in our profits, and stabilize our dividends as far as possible. We now make, for example, full provision in each year's accounts for income-tax due on the year's profits, and we have recently created a reserve for renewals and contingencies to prevent the disturbance of our financial results in any year by those heavy and sometimes unexpected charges which from time to time arise in connection with the replacement of works or their improvement.

All that has been done has been in the direction of building up an organization which is certainly much more efficient than it was ten years ago, and the result should be, and I have no doubt will be, reflected in the gradual improvement in the profits of our business, quite apart from any advantage which may be derived from the change in the value of the franc.

In the remarks I addressed to you a year ago a warning note was struck as to the condition of trade and industry in France, and attention was directed to indications pointing to a slackening in the general prosperity with which France, almost alone among the nations, seems to have been blessed since the war. The conclusion drawn was that while the prospects for 1931 were far from clear, there did not appear, on the one hand, adequate cause to anticipate any material improvement on the 1930 conditions, nor did it appear, on the other hand, that the prospects were likely to prove discouraging. That forecast, for what it was worth, has been to a great extent borne out by the facts. For the first half of the year the situation did not seriously deteriorate, and as far as this Company was concerned the gas consumption by the end of June had increased by 1·11 per cent. In the second half of the year, however, signs of general trade slackness became more apparent, as indicated by the barometer of gas consumption, which for the first time recently was stationary and then fell slightly, until at the end of the year the total consumption barely exceeded that of 1930. As soon as it became clear that the slackening of trade and industry in France had reached a point where the demand for gas was likely to be affected, steps were taken to effect reduction in working costs wherever possible, and I am glad to say our managers responded promptly and sympathetically to the urge of the Board for the exercise of rigid economy. Thanks to those gentlemen's efforts on the one hand, and on the other to the accidental advantage accruing to the Company as a result of the improved value of the franc in terms of sterling, the profits as shown by the Balance Sheet were not only maintained but were indeed rather more favourable than those of 1930, notwithstanding that trade conditions had become by then definitely worse.

In addition to our normal trading profit, we have had, on paper at any rate, a further gain due to the valuation of our floating balances, including stocks, at the exchange rate of 86·50 francs on December 31st, as compared with the rate of 124 at which the corresponding balances had been brought in in January, 1931. This gain, however, is not, and cannot be, a realized profit except in so far as it applies to the stocks of residuals, and then only to the extent to which they are disposed of during the current year, at franc prices not lower than those ruling on 31st December, and with a rate of exchange not less favourable than that which existed on that day. For the rest the gain will not come into our coffers in the form of cash, and if the exchange goes the other way we lose what we have gained.

In view of the uncertainty, therefore, both of the industrial situation and the exchange position, the Board considered it would be very imprudent to regard this gain as a trading profit and to appropriate it in any way, except as a reserve for future contingencies. They have therefore carried it to the Renewals and Contingencies Fund. This fund was constituted a year ago by the transfer of £57,000 from what was then the Insurance and Guarantee Fund, proper provision being made at the time for covering the liabilities hitherto provided for by that particular fund. The fund has been increased during the year by a specific allocation of 1½ centimes per cubic metre of gas made during the year. On the other hand, it has been depleted by charging against it the work of renewals and replacements of a non-recurring nature carried out in the same period. There has also been transferred to it the sum accumulated in past years towards the cost of replacement of the Nantes works by new works now in course of erection outside the city, at Roche Maurice, an obligation which we had to enter into in connection with the renewal of our concession. We had hitherto included this provision in the Redemption Fund, but now that constructional work has actually commenced it is more convenient and appropriate to carry that sum in the Renewals and Contingencies Fund. With these additions and deductions, and after charging the cost not chargeable to capital of work executed at Roche Maurice during the year, the Renewals and Contingencies Fund now stands at £155,793—none too high a figure having regard to our unavoidable commitments in the near future.

The reduction shown in the amount of the Redemption Fund I have just explained.

The items in the Balance Sheet representing stocks and stores in hand, sundry debtors, and cash at stations are substantially higher than a year ago, mainly owing to the improvement of the franc to which I have already made reference. The item "sundry creditors" is higher, the increase in the London figure being chiefly due to a reserve which, as I have told you, has been made in respect of income tax on the year's profits. The net value of our floating balances in France is not appreciably different—in francs—from what it was a year ago, but it shows a substantial increase in sterling. Our Bank loan is higher, and there are two reasons for that. The first is the unsold stocks of residuals—at the time when our accounts were made up on 31st December. I am glad to say they are being rapidly reduced. Secondly, it is due to the considerable expenditure during the year in connection with constructional work at some of our stations.

In spite of the heavy fall in the value of gilt-edged securities, the book values of the Company's investments stood at a figure below the Stock Exchange quotation when our accounts were made up. The Pension Fund Reserve does, however, show a little depreciation.

After providing for all charges and contingencies, and making full reserve for income tax at the rate of 5s., the profit earned enables the Directors to recommend a final dividend of 3¼ per cent., making a total for the year of 5¼ per cent., free of tax. With the express approval of the stockholders, we have been for some years past building up again the General Revenue Account, the reserve of undivided profits, which was sadly depleted both during and after the war, and we propose to continue our previous policy, and to carry the balance of Profit and Loss Account, amounting to £6280, to that reserve, which will then stand at £49,746.

You will want to know what is our opinion of the prospects

for 1932. Trade conditions in France are certainly worse than they were a year ago, and I have already referred to the fact that the normal progress of our consumption has been brought to a standstill, largely, but not wholly, due to the decrease in the sale of gas for industrial purposes. Many of the manufactories are working on short time. Certain it is that the slowing up of consumption is not due in any way to loss of confidence in the value of gas in France, and when we consider the steady gain year by year in the number of our consumers it is not unreasonable to look for an improvement in consumption as soon as a greater degree of prosperity returns. We ought, however, to be prepared for a lean period during which we may even find our consumption falling off, in spite of our efforts to increase and popularize the use of gas. It may also be that our efforts on the one hand to extend the use of gas may be vitiated on the other by the economic conditions of the country. There is, of course, the other factor of the financial gain arising to-day from the improved value of the franc in terms of sterling, and if sterling remains at a rate substantially below its par value, the loss of profit on working due to unfavourable conditions of trade would, of course, to that extent be compensated for.

So much, ladies and gentlemen, for our accounts—those annual statements of debit and credit transactions and provisions with which you are familiar as a result of these meetings. There is one item, however—and I am not sure that it is not the most valuable of all—which does not make the slightest appearance in these Accounts, but to which I feel I ought this morning to make some definite reference. It is that of goodwill. This Company, founded in 1835, occupies what I believe I am right in saying is a unique position to-day in that it is the only British undertaking directly owning and carrying on, under concessions, of course, undertakings supplying gas to important towns in France. Through all the vicissitudes of history, for nearly one hundred years, it has continued steadily to carry on that business. It has seen France devastated by two great wars—the Franco-Prussian War of 1870-71, and the more recent European War of 1914-18. It has operated in that country under various forms of government. Its first concession was made under King Louis Philippe. It was under that monarchy until 1848, a republic until 1852, an empire until 1871, and again a republic since that date. Throughout all those changes the Company has pursued persistently the policy of cultivating friendly relations with the municipalities from which it holds concessions and the townspeople it supplies with gas, and it has used every effort to obtain their confidence by giving them fair treatment and good service. I think we may claim that that policy has been justified by results, and that the municipal authorities with whom we have dealings to-day recognize that we have endeavoured to carry out those obligations honestly and with a sense of responsibility for the important services which have been entrusted to us.

There has at the same time grown up in the course of generations an association which I like to think is not altogether without its value at the present time, when so much is being talked about or done to promote better feeling and better understanding between nations. There have been in the past, and will be in the future, differences of opinion between this country and our neighbour. I believe it will be in the best interests of the world and of Europe in particular, that not only the statesmen but also the peoples of these two great nations should work in harmony for the solution of the many problems, both diplomatic and industrial, which have been left as a legacy of the war. I think that in however humble a way, the European Gas Company carrying on important public services in France—and, ladies and gentlemen, not merely tolerated, but encouraged, as it has been over and over again by the municipalities concerned as worthy to be entrusted with that duty—is bearing its share in promoting the good understanding which can do so much to avoid points of friction which lead so often from misunderstanding to ill-feeling.

Personally I rejoice to think that my unsought occupancy of a seat on your Board, to which I was invited some years ago, has given me the opportunity to participate in the work of extending the goodwill to which I have referred, as being of importance not only to our Company but to our Country also, and I venture to affirm that the work has been done at any rate not less effectively than had it been the sport of some soulless trust.

I now beg to move:—

> That the Report and Statement of Accounts for the year ended 31st December, 1931, be received and adopted.

Mr. F. H. JONES (Deputy Chairman): I second that.

Mr. BISGOOD said that the Company had had a wonderful record before the war, and stockholders had been looking forward to a better return on their capital after the ravages of the war had been put right. It was a good thing to have the goodwill of the French, but international feeling did not always remain good, and if the Company's business had to depend on goodwill, the business would go down. From time to time there had been moves by people interested in Gas Undertakings in France, in the hope that they might be able to come to some arrangement to take over the business of this Company. Four or five years ago there was an obvious move, and there was another venture back in the summer. They were not mere gamblers in shares, but the ordinary stockholder was a person who expected either a profit or a loss; if he got a loss and was satisfied that it could not be avoided, he did not complain, but he had a right to expect some capital appreciation, and it would have been thought that such an appreciation might have taken place. If a reasonable offer were put before the stockholders again from some outside source, it should be encouraged by the Board.

Mr. CLARK said that he represented one of the two firms of stockjobbers who were engaged in negotiations last July, and Mr. Whittington had asked him to express his regret at not being present to-day. Their action had been unwittingly misrepresented. Mr. Whittington and he were approached by a firm of Stockbrokers with large French interests who said that a big Bank in Paris wanted to buy a large holding in the European Gas Company, and asked whether he could obtain 51 p.ct. or more of the Company's stock. He and Mr. Whittington replied that if they would name the price that they were prepared to pay, he would approach the Chairman. The firm could not make a firm bid above a certain figure which he told them was useless, but they asked for a counter offer. He and Mr. Whittington went to see the Chairman of the Company, who said that though the Board would consider any proposal, they were not in a position to make a firm offer on behalf of the stockholders. The Brokers were therefore informed that the bid must come from their side. After a week the Brokers told him that if he could get a fair quantity of stock offered, it might lead to their making a counter proposition. The French Syndicate was informed that any proposal made for purchasing this stock must be open to every stockholder of the Company, and therefore they must be prepared, if necessary, to take the whole issue. There must be no shutting out of any stockholders. Unfortunately the day on which a reply was to be given coincided with the day on which this country went off the gold standard, and any transaction between francs and sterling was made hopeless.

Mr. Clark added that on looking at the last four balance sheets of the Company it would be seen that the net profit during six years had only varied within limits of about £5000; there might be reserves for depreciation and betterment of which they knew nothing, but there was no means by which they could gauge what progress the Company was really making. He therefore suggested that next time a more exhaustive Profit and Loss or Earnings Account should be given.

Mr. WHITWORTH supported the last speaker, and moved that the accounts be not adopted unless an undertaking were given by the Directors to furnish more information.

After some discussion the CHAIRMAN said: The paucity of information is to some extent a legacy from the past. When I was first associated with the Company we did not even circulate the Accounts, and it was on my initiative that that was done. How far we attach too much importance to not disclosing our affairs to all and sundry, I am not prepared to say, but that is the only reason why the information contained in the Accounts is so slight as it is. It can always be amplified for the information of any stockholder who desires it. How far we can publish further information, I cannot say at the moment, but I will undertake as far as I am able, and speaking on behalf of the Board, to examine this question very closely and to go as far as we can in the direction of giving you much fuller and more complete information such as it is our custom to provide in the various other companies with which I and my colleagues happen to be associated.

Mr. CLARK suggested that figures for the last ten years should be sent out as soon as possible to enable the stockholders to gather the progress of the Company.

The CHAIRMAN: "I think we can do a great deal to meet your wishes. May I take it that the meeting is in agreement with the proposal that we issue this information? [Agreed.]

I think you will now be in a position to vote on the Resolution which I moved at the beginning and which has been duly seconded."

The resolution was put and carried unanimously.

The CHAIRMAN: I have now to move:

> That the interim dividend of 2 per cent. paid on 1st October last be and is hereby confirmed, and that a final dividend for the year ended 31st December, 1931, of 3½ per cent. be now declared, such final dividend to be paid on 1st April next, the whole to be paid out of interest and profits, free of income tax.

Mr. W. G. BRADSHAW seconded, and *the resolution was carried.*

The CHAIRMAN: I propose the resolution:

> That Mr. Frank H. Jones and Mr. A. M. Paddon be re-elected Directors of the Company.

Mr. BRADSHAW: I have very great pleasure in seconding that resolution.

The resolution was carried unanimously.

Mr. JONES and Mr. PADDON having returned thanks,

Mr. BISGOOD proposed, and it was seconded from the body of the meeting:

> That Mr. G. C. Goldsmid and Mr. B. Dennett Holroyd, the retiring Auditors, be re-elected at the same remuneration as before.

This was carried unanimously.

The CHAIRMAN: I have now to propose:

> That the best thanks of the meeting be given to the staff of this Company abroad and at home.

I should like to take the opportunity of saying a word about our General Manager, Mr. Williams, whose family's association with this Company is a long standing one. I can assure you that Mr. Williams is an irreplaceable man, and if he were induced to take some other post I should find it impossible to lay my hand on a gentleman so completely qualified to carry

on the work of the Company. With regard to the remainder of the staff both in London and in France, you could not have a better one. They look upon the Company with affection, and this shows itself in all the work they undertake and in the returns they make.

Mr. F. H. JONES: I second the vote of thanks with great pleasure.

Mr. LE ROY LEWIS: I have great pleasure, from the body of shareholders, in supporting that.

The resolution was carried unanimously.

The notice summoning the Extraordinary General Meeting was then read, but the Chairman stated that, as shareholders had already been advised, it was not proposed to put forward the resolution, and unless anyone specifically wished to discuss the matter, he did not propose to proceed further. The resolution automatically fell to the ground, and, there being no discussion, he declared the business at an end.

Mr. LE ROY LEWIS: It is my great privilege to propose a vote of thanks to you, Sir, and your colleagues on the Board. You have had a very hard row to hoe for many years now in the administration of a particularly difficult business, and though unfortunately there may yet be stones or even rocks in the way, I think we in this room and all your shareholders are perfectly confident that you and your colleagues are the right people to remove those stones and to put forward the Herculean efforts which may be necessary to remove such rocks as you may find opposing your progress.

Mr. BISGOOD: I should like to second the vote of thanks to you. I came here more as an inquirer after knowledge. In what I said at the beginning I was only expressing a feeling that has been expressed to me, and which I think was better ventilated here than left to be discussed *sub rosa* in and around the City.

The resolution was put by the mover and carried with applause.

The CHAIRMAN: We are all very appreciative of the words you have used in proposing this vote of thanks.

Mr. F. E. WILLIAMS (General Manager and Secretary): I should like to say a word in response to the vote of thanks moved by the Chairman. The Chairman has been so exceedingly kind to me personally, that a word of acknowledgment on my part is more than necessary. Let me add that I am always available for any stockholder who wants information. I want to thank you also on behalf of the staff, both in London and abroad. I do not know whether the stockholders realize how the staff, abroad particularly, has grown up in the Company's service, perhaps to the third generation. And we do get much more than the ordinary service as between employer and employed from men who have spent their lives in the work and are devoted to the Company. The expression was used by one of the French employees, "The Company is our father and our mother," and quite seriously that is not an exaggeration in the case of some of our older staff. That tradition is of great value to the Company, and it is more than you can buy with money.

The proceedings then terminated.

Gas Companies' Results in 1931

Dover.

The Annual Meeting of the Dover Gas Company was held at the Company's Offices, Biggin Street, when the Chairman of the Directors (Mr. E. M. Worsfold) presided. The Chairman, in moving the adoption of the Directors' report and statement of accounts, said: The consumption of gas shows an increase of 12·1 p.ct. over last year. This is accounted for by the commencement of the contract for the bulk supply, which has been made on terms favourable to the Company, and although it has temporarily involved the Company in a capital outlay of £6000, it has resulted in the employment of plant which at the moment was unproductive. The total tonnage of coals carbonized is 20,310 tons, against 17,788 tons last year. The cost per ton of coal was £1 0s. 7d., against £1 2s. 2d. the previous year, and after allowing for the sale of residuals, the net cost of coal has been 6s. 2¾d., against 6s. 10¾d. in the previous year, a saving of 8d. per ton. Repairs to manufacturing plant have increased from £4968 to £6843. This increase includes a sum of £1250 written off capital for old plant demolished. Distribution charges have increased £1387. Repairs to mains have gone up by £704, meters £261, and stoves £416. Management charges have decreased £413. The usual sums have been transferred—viz: £1050 to co-partnership fund; £977 10s. to special purposes fund; £977 10s. to renewals fund. The net result is a carry forward to net revenue of £14,279, against £13,000 last year, which is an increase of £1279. The balance to the credit of capital account is now reduced from £11,845 to £1028. A final dividend was declared at the rate of 4¾ p.ct., less income-tax (making with the interim dividend 8½ p.ct. for the year).

At a subsequent extraordinary general meeting a resolution was passed giving the Directors power to issue further debenture and ordinary capital. An issue of both will be made shortly to meet the capital expenditure incurred in connection with the entire supply of gas to the East Kent and Whitstable Gas Companies.

Prescot.

At the Annual General Meeting of the Prescot and District Gas Company, Mr. F. V. Driffield, the Chairman, presided. In moving the adoption of the balance-sheet for the year ended Dec. 31, 1931, he dealt very fully with the Company's activities during the year. There has been a large increase in the demand for gas, the consumption being up by 8 p.ct. The profits for the year were £5300. The full statutory dividends were declared on all classes of shares and stock.

Sheffield.

The One Hundred and Thirty-Second Ordinary Meeting of the Sheffield Gas Company was held at the Company's Offices, Commercial Street, Sheffield—Col. H. K. Stephenson, D.S.O. (the Chairman), presiding. In moving the adoption of the report and accounts, he said: The total quantity of gas sold during the year amounted to 4,817,663,000 c.ft.—a decrease of 3·18 p.ct. on the previous year. The amount of capital raised remains unaltered. The usual depreciation has been allowed, and our expenditure on mains and meters has been limited to normal expansion and the linking up of new estates to our existing distributory system. A sum of £8528 has been charged on account of the gas grid scheme. This item represents the proportion of expenditure to date properly chargeable to capital. At the end of the year we had an overspent balance on capital account of £27,117, which, in view of our financial position, is not important. Against decreases in revenue must be put the various reductions in expenditure. Among them I may mention that while coke oven gas cost us £1954 more than in the previous year, coals cost us £15,407 less. We have also been able to effect various economies without in any way prejudicing efficiency. We have charged to revenue the proportion of the costs of our 1931 Act of Parliament which are properly so chargeable. After making full provision for all our expenses there is a surplus of £155,676 to transfer to the profit and loss account. This latter account contains the usual charges for interest, and unfortunately this year the income-tax account instead of showing a surplus shows a small adverse balance to be charged against revenue. In the result there is a net credit balance to be carried to next account, subject to the half-year's dividend of £107,528. An interim dividend at the rate of 6 p.ct. per annum for the half-year ended June 30, 1931, has already been paid, and if the necessary resolution receives your support a final dividend at the same rate for the half-year ended Dec. 31 last will be paid, making a total distribution for the year of 6 p.ct. This will leave us with a "carry-forward" of £64,104. Although we are, of course, disappointed at having to ask you to vote for a dividend which is ½ p.ct. less than a year ago, I think you will agree that in these hard times 6 p.ct. cannot be considered unsatisfactory.

Tunbridge Wells.

Despite the difficult year, the Tunbridge Wells Gas Company had a very satisfactory period. This was revealed at the Annual Meeting of shareholders when Mr. H. A. Beeching, Chairman of Directors, presided, and, moving the adoption of the report and accounts, said that the sale of gas showed a slight increase despite the economy being practised by all, and despite, also, the exceptionally mild weather in 1931. On revenue account total working costs were £5500 less, due to a considerable drop in repairs and maintenance of works and plant. Coal and oil cost only £500 more, which should be considered satisfactory in view of the increased make. Distribution expenses were about £2250 more, all the items showing increases. Public lamps, as usual, were a little less; rents, rates and taxes also slightly less. The total management expenses were £400 less; co-partnership bonus was the same, and the pension fund was slightly increased, owing to the inclusion of the Crowborough staff. The total of the pension fund was now £19,138, of which £11,065 was invested in sound securities, and £8072 on deposit with the Company. The present number of co-partners was 185, of whom 144 held stock in the Company, the value of which was £5266 (nominal). Private lighting showed an increase of 27,842 therms over 1930, and realized just over £100,300 in cash, against £99,300 last year—not much of an increase, but just a little. The number of consumers was now 14,833. Of these 6300 were ordinary, and 8533 prepayment. New gas stoves sold in 1931 numbered 1527. The balance to be carried forward to next year, after payment of the same dividends, would be £25,666. He moved that the annual report and statement of accounts be received and adopted, and that a dividend for the half-year to Dec. 31, 1931, at £7 4s. p.ct. per annum on sliding-scale stock, and 5 p.ct. per annum on maximum dividend stock (less income-tax) be declared and paid.

[Further Results will be found on pages 746 and 747.]

Radiation Limited

Ordinary General Meeting

At the Annual Meeting of the Company, held at Southern House, London, on the 21st March, 1932, the Chairman, Mr. H. JAMES YATES, in moving the adoption of the Report and Accounts, said:

When addressing you last year, I referred to the very serious times the manufacturers of this country had been passing through, and we were hopeful that 1931 would have brighter times in store for us, but our hopes were not to be realized; world-wide embarrassments exercised their inevitable effect on the general trading conditions in this country. Notwithstanding our difficulties, I am glad that we can again present to you a Report which enables us to recommend the continuance of a dividend at the same rate as in previous years, and I am sure you will consider this a satisfactory result of our work during the past year.

I now turn to the Directors' Report and Accounts, with which is included a Statement of the Combined Assets and Liabilities of all the Subsidiary Companies.

On the Assets side of the Radiation Balance Sheet, the principal amount £3,667,385, consists of the cost to Radiation of the Investments in Subsidiary Companies £2,392,675 (which is the same figure as last year), and the amount £1,274,710, due from those Companies to Radiation. The latter amount includes the Dividends for 1931, declared by the Subsidiary Companies, to be paid to Radiation; also Balances of Dividends for past years; Charges paid, in the first instance, by Radiation on behalf of Subsidiary Companies; and Loans by Radiation to those Subsidiaries.

On the Liabilities side of the Radiation Balance Sheet, the amount of Issued Capital £3,350,084, appears to show a slight increase compared with the amount of the previous year. This, however, is due to the settlement of a small item of Calls Unpaid, which was outstanding last year.

From the Profit and Loss Account, it will be observed that the Net Income from the Subsidiary Companies, together with Transfer Fees and Bank Interest makes a total of £293,754, compared with £295,292 a year ago. This result, I am sure you will agree, is very satisfactory in view of the difficult trading conditions which prevailed during the year 1931.

Turning to the Combined Statement of Assets and Liabilities of the Subsidiary Companies, on the Liabilities side it will be seen that the Debentures of those Companies have been reduced to £50,850, by the further purchase of Debentures by the Companies.

Sundry Creditors have increased from £510,634 to £542,299, the increase being partly due to additional liability for Taxes.

The next two items refer to the cost to Radiation of the shares in Subsidiary Companies, and the amounts due by Subsidiary Companies to Radiation. These two items appear also on the Assets side of the Radiation Balance Sheet, and I have already referred to them.

Turning to the Assets Side of the Combined Statement: the first item, Freehold and Leasehold Land and Buildings, has increased from £776,150 to £804,141; and Plant and Machinery from £285,043 to £308,777, the total increase in these assets being £51,725.

Stocks have decreased from £604,737 to £531,952, and Sundry Debtors have also decreased, the present figure being £464,652.

There is an increase in the amount of Investments from £1,505,144 to £1,656,997, and the Cash Balances have increased from £404,589 to £484,035.

Against the figure of Goodwill £901,724 we have Undistributed Profits standing to the credit of Profit and Loss Accounts in the Subsidiary Companies amounting to £891,743, which, if deducted from the Goodwill item, would reduce the amount from £901,724 to £9981.

The continued heavy expenditure on our Research work is, I feel, more than justified by the result of the past year's trading. We have also increased our expenditure in various forms of advertising by which means we are able to bring to the notice of the public the results of our work.

Occupying the position we do as the pioneers in the development of the modern gas cooker, gas fire, gas radiator, and domestic gas-heated hot-water apparatus, we regard it as essential to devote our attention to the production of new or improved types of apparatus so that the name "Radiation" shall continue to be recognised as the Hall-mark for gas appliances. I would recall to your minds that our "New World" Cooker with its automatic "Regulo" oven-heat control, when first introduced was considered so revolutionary a departure from long-established practice, that certain of its features were even disparaged at that time. Now, however, these features have become the standard throughout the country, and, in consequence, the sales of "New World" Cookers are still increasing.

During the past year there have been two very important developments resulting from our Research work, viz., the "Cobble" "Beam" Gas Fire, and the Radiation Clinical Gas Lamp. Valuable as the modern type of Gas Fire has been proved to be, by its popularity, and by the expressed opinion of the great part of the Medical profession, who themselves use and recommend Gas Fires, we have had in mind for many years past that finality had not been reached and that further developments could be accomplished. Accordingly, we concentrated our attention on this problem, and a few months ago we introduced an entirely new type of gas fire called the "Cobble" "Beam"—a dual name chosen because it made reference both to the appearance of the fire and to its characteristic feature.

This gas fire is a further development arising from the Research work which led some years ago to the production of the "Beam" radiant. You will no doubt remember my telling you last year of the growing appreciation in Medical circles of the value, as a therapeutic adjunct, of infra-red energy, and since that address we have had further evidence that the heat from gas fires fitted with "Beam" radiants is of definite therapeutic value. Our object in producing the "Cobble" "Beam" Fire has been to increase the percentage of short infra-red energy emitted by the gas fire and thus to obtain a softer and more comfortable warmth definitely stimulative to the human system.

As compared with the ordinary gas fire, fitted with radiants, a much higher temperature is attained within the interior of the "Cobble" "Beam" Fire. This necessitates the use of special refractory materials to withstand this high temperature and has involved a prolonged and costly Research to obtain suitable materials. Production problems have also been unexpectedly great and, in fact, have been very difficult of solution.

The "Cobble" "Beam" Gas Fire is a radical departure from anything produced hitherto; accordingly we decided that for the time being only a limited supply should be released.

Our other advance in a similar direction has been the introduction of the Radiation Clinical Gas Lamp. This appliance has been well received and a considerable number of the lamps are now in use. The lamp was developed primarily to provide an efficient and economical source of infra-red energy for use in hospitals and clinics, and its introduction marks the opening up of a new field for the application of gas. The gas is burned within a refractory radiant treated with a mixture of inorganic compounds to ensure the production of energy rich in short infra-red rays. The radiant is secured in position near the focus of a highly-polished parabolic reflector so that the energy can be directed in a slightly-diverging beam on to the part of the body to be treated.

Treatment with the energy emitted by the Radiation Clinical Gas Lamp has been found to alleviate the pain and discomfort caused by such complaints as rheumatism, neuritis, and sprains; it has also been found effective in clearing up eruptions such as acne, &c.

We are about to place on the market a cheaper form of this lamp for home use. This Home Clinical Lamp retains all the valuable features of the more expensive model designed for use in Clinics and similar establishments.

Our business in Gas Boilers for domestic hot-water supply, fitted with the automatic "Regulo" control, has developed on a very large scale. Thousands of satisfied users are among our best advertisements of the expansion of this side of our business. We were the first to introduce a highly-efficient self-contained storage water-heater with a maximum consumption of 10 cu. ft. of gas per hour, which will deliver, at a cost of a few pence per day, sufficient hot water for the domestic supply, not only in existing property, but in the many thousands of new houses that are being built to-day. We have now added to the number of designs of our hot-water apparatus of various types so as to meet the many requirements in this field.

In the present chaotic world-situation, lack of employment on a vast scale, and great poverty and distress, are found alongside of an abundance of everything required for human comfort and development. This state of things not only coincides with an unexampled degree of scientific and mechanical progress, but, paradoxically enough, it is due, in some degree, to that very progress itself. The subject, however, is one on which much is daily being said and written by those who are in a better position than I am to speak on such affairs, and I will content myself with saying that one of the prime factors for the recovery of world prosperity is the readjustment of Inter-Allied War Debts and of Reparations. In this connection, as regards our own country, equitable terms must be agreed upon, otherwise she would be left crippled with a debt per head of the population exceeding, out of all proportion, that of any other country with whom we have to compete for the maintenance of our trade. Apart from the money we still owe to America for supplies during the war, our internal debt amounts to £6,580,000,000, representing:—

£150 per head of population.

This compares with the internal debt of:—

£56 per head of population in the case of France,
£27 per head of population in the case of U.S.A.,
and
£8 per head of population in the case of Germany.

These figures indicate what the position would be if all external War Debts were cancelled.

The problem of Tariff relations between all countries is one which calls urgently for international review and adjustment. World peace, prosperity, and progress can only be attained when it is possible to have interchange of goods between one country

and another, under tariff conditions suitably modified by international consent.

Once again it is a pleasure to me to place on record our high appreciation of the valuable work done in the Company's interests by our staff and all others in the service.

I now have pleasure in moving:—

"That the Directors' Report and Accounts for the year "ended 31st December, 1931, as presented by the Directors, "be received and adopted, and that Final Dividends be "declared as follows:—3 per cent., less Income Tax, for "the half-year to 31st December, 1931, on the 6 per cent. "Cumulative Preference Shares; and 9¾ per cent., less "Income Tax, on the Ordinary Shares, making, with the "Interim Dividend paid in October, 1931, a total Dividend "of 12½ per cent. on the Ordinary Shares for the year."

Gas Companies' Results in 1931.

Cheltenham.

In consequence of the acquisition of the Tewkesbury and Winchcomb Gas Companies the capital of the Cheltenham and District Gas Company has been increased by the issue of £16,000 5 p.ct. consolidated ordinary stock. The quantity of gas sold to consumers in 1931 was 614,612,600 c.ft., being an increase of 34,334,000 c.ft. over the amount sold in 1930. Of this increase, about 15 million c.ft. is attributable to the Winchcomb and Tewkesbury added areas, the latter borough having been connected up with the Company's mains only since Sept. 7, 1931. The remainder of the increase—viz., 19 million c.ft.—being in respect of the Company's original area of supply, shows a very healthy and consistent expansion of the Company's business during the year. The absorption of the Tewkesbury and Winchcomb Gas Companies is complete. The year has also seen the change in the Company's name, and the passage of the Cheltenham and District Gas Order, 1931, extending its potential area of supply to 225 square miles, also enlarging and bringing up to date its statutory powers. The Directors recommend the payment of a dividend at the rate of 5 p.ct. per annum on the paid up consolidated ordinary stock for the year ended Dec. 31, 1931, out of the profits for that year, which amounted to £25,038.

Gosport.

Presiding at the 97th Annual Meeting of the Gosport District Gas Company, the Chairman, Mr. W. E. Churcher, stated that during the past year they had registered a large increase in the quantity of gas sold, amounting to more than 25 million c.ft., or just under 7 p.ct. During the past ten years, the increased sales of gas at Gosport had amounted to just over 110 p.ct. Last year, he had occasion to draw attention to the fact that the quantity of gas made in 1930 had passed the 400 million c.ft. mark, and for 1931 this quantity had been increased to 432 million c.ft. The contract for public lighting expired last year, and the Gosport Corporation invited competitive tenders for the improved lighting of the borough by gas or electricity. He was pleased to report that they had been successful in renewing the contract for the whole of this lighting, amounting to approximately 700 lamps, and the improved effect of the installation, which consisted of higher candle-power lamps than before, those in the High Street being centrally suspended over the carriageway, had been the subject of favourable comment. An important feature of last year had been the acquisition of the undertaking of the Bishop's Waltham Gas and Coke Company and the extension of the Company's statutory area of supply. From 25 square miles in 1915, the Company's area of supply now extended to just over 71 square miles, and it was anticipated that the sales of gas in the new district would make a useful contribution to the continued development of the Company. Last year they sent out 1420 appliances, as compared with 1316 the year before. The revenue from this department was £12,624, an increase of £562. The number of consumers now reached the total of 11,927. Mr. Churcher stated that new capital consisting of £10,000 consolidated ordinary stock and £5000 preference stock was issued during the year. The total revenue was £87,193, and the balance to be carried forward to the profit and loss account was £14,810. The payment of the maximum dividends of 5 p.ct. on the preference stock and £7 16s. p.ct. on the consolidated ordinary stock was approved.

Isle of Thanet.

The Annual General Meeting of the Isle of Thanet Gas Light and Coke Company, Margate, was held at the Company's Offices, Margate—Mr. Walter Hills (Chairman) presiding. In moving the adoption of the report and accounts for the year 1931, the Chairman said: In ascertaining the financial position of a company, perhaps the consideration of primary importance is the amount of the capital involved, and in this respect our position is highly satisfactory, as the capital invested in this undertaking has been reduced to £353 per million c.ft. of gas sold, which is an exceptionally low figure. As to the condition of the works at the present time, they are excellent, having been considerably modernized during recent years, and the re-constructed vertical retorts are not only working well, but giving results never before reached in the history of the Company. As to

AT BRADFORD CORPORATION GAS WORKS.
FIVE PURIFIERS 45 FT. x 35 FT. x 6 FT. WITH MILBOURNE OUTSIDE VALVES.

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the financial position, it is absolutely sound, and built upon a stable foundation, as is confirmed by the balances standing to the credit of the several funds. The price of gas charged by the Company is still the lowest in Kent, and is under that charged by the majority of the Metropolitan Companies. We take this opportunity of emphasizing the correction of the erroneous statement recently made, which gave rise to a serious misapprehension to the effect that the price now charged is 1s. 2d. per therm, by making it quite clear—particularly to potential consumers—that, since the March quarter, 1930, the price of gas has been only 8d. a therm. The public lighting continues to give satisfaction, and much time and attention is given in the careful nightly inspection and maintenance of all lamps throughout the district. A total of 1202 cookers, fires, and water heaters were sold during the year, including 100 more gas fires than in the preceding year, and 30 water heaters more than in 1930, for which results some credit must naturally be given to the new showrooms. There has been a slight advance in the output of gas, compared with the previous year. It is also highly satisfactory that the gas unaccounted-for is considerably below that of past years, being only 5·4 p.ct. of our make.

Woking.

The Directors' report of the Woking District Gas Company for the year ended Dec. 31, 1931, shows that in comparison with the year ended 1930, the quantity of gas sold has increased by 3,596,421 c.ft., or 1·87 p.ct., but receipts from sale of residual products show a decrease of £132. The net gains in consumers during the year number 531, and 1404 cookers, gas fires, &c., have been fitted. The profit on revenue account, including interest receivable, is £12,876, and after charging interest on debentures, loans, &c., and income-tax, and writing off discount on redeemable debenture stock, amounting in total to £5434, there remains a balance of £7442, which represents the net profit for the year, to which must be added £6716, the balance brought forward from last account. The interim dividends absorbed £3645, leaving a disposable balance of £10,512, as shown in the profit and loss account. The Directors recommend that final dividends for the year be paid at the following rates (less income-tax): On the "A" ordinary stock, £5 5s. p.ct., making £10 10s. p.ct. for the year; on the "B" ordinary stock, £3 13s. 6d. p.ct., making £7 7s. p.ct. for the year; on the "C" preference stock, £2 10s. p.ct., making £5 p.ct. for the year; and on the 8 p.ct. redeemable preference stock, £4 p.ct., making £8 p.ct. for the year. This appropriation will amount to £3719, leaving a balance of £6793 to be carried forward to next account.

Parliamentary Intelligence

[From Our Special Correspondents.]

House of Lords.

Gas Undertakings Bill.

The second reading of this Bill was moved by Viscount Bridgeman on March 15. After a brief discussion it was passed and referred to a Committee of the whole House. It passed the Committee stage on March 17 without debate or amendment.

Private Bills.

The Gas Light and Coke Company Bill and the South Metropolitan Gas Bill are still waiting for Select Committees to be appointed for their consideration. The Mid-Southern Utility Bill is waiting for the Examiner's Certificate of Compliance with Standing Orders in respect of the petition for an additional provision.

Special Orders.

The Special Orders Committee is meeting on March 22 to consider the Nantwich Gas Order and the Harrogate Gas Order. A Special Order on the application of the Kidderminster Gas Company has been laid before the House and referred to the Special Orders Committee.

House of Commons.

Private Bills.

The Kettering Gas Bill, which passed its second reading after a debate on March 14, has been referred to the Examiners of Petitions for Private Bills. It will then be referred to Group "C" Committee, consisting of Mr. Savery (Chairman), Dr. John Williams, Sir Walter Smiles, and Capt. Heilgers.

This Committee will also consider the South Suburban Gas Bill, the Mid-Southern Utility Bill, and two other Bills before reaching the Kettering Bill. Its first meeting is called for April 5, but it will not take any Gas Bill on that date

The Commercial Gas Bill has been passed by the Examiners and committed.

Special Orders.

A Special Order on the application of the Kidderminster Gas Company has been presented and ordered to lie on the table of the House.

GAS MARKETS & MANUFACTURES

Stock Market Report.

[For Stock and Share List, see later page.]

Stock Exchange affairs were subjected to several abnormal events during last week. Business commenced under the influence of the Kreuger tragedy, then came the Treasury Bond conversion scheme, which was followed by a surprise reduction in the Bank Rate from 4 to 3½ p.ct. The latter brought about an improvement in gilt-edged securities, and it is a tribute to the solidarity of markets that prices in other sections were practically unaffected by outside influences. Now that the Treasury Bond scheme is out of the way and an era of cheap money appears imminent, rumour is rife that the date of the War Loan conversion is not far distant.

The improvement in Gas stocks and shares, which has been a feature during the past few weeks, was again maintained, and a further large number of transactions was recorded. Ordinary and preference issues were in active demand, and prices responded accordingly. Portsmouth consolidated headed the list of increases with a gain of 6 points to 125½. At this price the yield on last year's distribution of 8 p.ct. works out at £6 7s. 5d. p.ct., which is still attractive having regard to the soundness of the Company's position. Plymouth and Stonehouse 5 p.ct. came next with a rise of 5 points to 120½, and as a similar rate of dividend was paid in this case some further improvement is justified. South Shields consolidated advanced 3½ points to 126 and Newcastle £1 units 6d. to 17s. 6d., both on the Newcastle Exchange; while Croydon maximum dividend gained 3 points to 84½. Among preference stocks to improve, the most noticeable was Wandsworth 5 p.ct. by 4 points to 99½; and South Metropolitan 6 p.ct. followed up the previous week's jump of 5 points by a further 2 to 114½, business being done at 115½. Several debentures also hardened, the 1st and 2nd 4 p.ct. of the Bristol Company being the most prominent, both gaining 3 points to 81 at the local Exchange.

The Directors of the Eastbourne Gas Company are issuing by tender £20,000 5 p.ct. irredeemable debenture stock at a minimum price of par. Tenders, which must be for not less than £50, or upwards in multiples of £50 should be lodged at the Company's Offices, 87-89, Terminus Road, Eastbourne, not later than noon on Thursday, March 31.

Current Sales of Gas Products.

The London Market for Tar Products.

LONDON, *March* 21.

There is little or no change in the values of tar products, which are as follows:

Pitch is firm at about 95s. per ton f.o.b.

Creosote, for export, varies from 3¾d to 5d. per gallon, according to specification.

Refined tar is 4d. to 4¼d. per gallon in bulk at makers' works.

Pure toluole is about 2s. 8d. to 2s. 9d. per gallon at makers' works; pure benzole, 1s. 8d. to 1s. 9d. per gallon; 95/160 solvent naphtha, about 1s. 5d. per gallon; and pyridine bases, about 3s. 9d. to 4s. per gallon.

Tar and Tar Products in the Provinces.

March 21.

The average prices of gas-works products during the week were: Gas-works tar, 42s. to 47s. Pitch—East Coast, 85s. to 90s. f.o.b. West Coast—Manchester, Liverpool, Clyde, 85s. to 90s. f.o.b.* Toluole, naked, North, 1s. 10½d. to 1s. 11d. Coal-tar crude naphtha, in bulk, North, 5d. to 5¼d. Solvent naphtha, naked, North, 1s. 3d. to 1s. 3½d. Heavy naphtha, North, 11d. to 11½d. Creosote, *ex* works, in bulk, North, liquid, and salty, 3½d. to 3¾d.; low gravity, 1¼d.; Scotland, 3½d. to 3¾d. Heavy oils, in bulk, North, 5d. to 5¼d. Carbolic acid, 60's, 1s. 7¾d. to 1s. 8d. Naphthalene, £9 to £10. Salts, 55s. to 75s., bags included. Anthracene, "A" quality, 2½d. per minimum 40 p.ct., purely nominal; "B" quality, unsaleable.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading costs and the tolls whatever they may be.

Tar Products in Scotland.

GLASGOW, *March* 19.

While prices continue firm in most departments, there is not much new business being arranged at present on account of shortage.

Crude gas-works tar.—Actual value remains firm at 52s. 6d. to 57s. 6d. per ton *ex* works.

Pitch.—Value for export is nominal at 80s. to 85s. per ton f.o.b. Glasgow. For home trade, 82s. 6d. to 85s. per ton *ex* works is quoted for delivery in bulk.

Refined tar to Ministry of Transport Specification is now in demand by county authorities for delivery over the coming season, and value is firm at 4⅝d. to 4⅝d. per gallon f.o.r. naked.

Creosote oil.—Prices are steady with supplies not too plentiful. B.E.S.A. Specification is 3d. to 3¼d. per gallon; low gravity, 3⅞d. to 4d. per gallon; and neutral oil, 3⅝d. to 3⅞d. per gallon—all f.o.r. makers' works in bulk.

Cresylic acid.—This market remains dull. Pale, 97/99 p.ct., is 1s. 1¼d. to 1s. 2¼d. per gallon; dark, 97/99 p.ct., 1s. 0¼d. to 1s. 1¼d. per gallon; and pale, 99/100 p.ct., 1s. 3¼d. to 1s. 4d. per gallon—all f.o.r. naked.

Crude naphtha.—Available supplies are valued at 4½d. to 5d. per gallon, according to quality and district.

Solvent naphtha.—Quotations are easy at 1s. 3d. to 1s. 4d. per gallon for 90/160 grade, and 1s. to 1s. 1d. per gallon for 90/190 grade.

Motor benzole.—1s. 3d. to 1s. 4d. per gallon *ex* works continues to be quoted for bulk delivery.

Pyridines.—90/160 grade is 3s. to 3s. 3d. per gallon, and 90/140 grade 3s. 3d. to 3s. 6d. per gallon.

Benzole Prices.

These are considered to be the market prices for benzole at the present time:

	s.	d.		s.	d.	
Crude benzole	0	7	to	0	7½	per gallon at works
Motor "	1	2	"	1	3	" " "
Pure "	1	6	"	1	7	" " "

Contracts Advertised To-Day.

Pipes.

The Skipton Urban District Council invite tenders for mains in connection with their high-pressure gasholder scheme. [Advert. on p. 752.]

Gas Engines and Alternators.

The County Borough of Burnley invite tenders for the supply, delivery, and erection of two vertical gas engines and alternators. [Advert. on p. 752.]

Trade Notes.

Test Holders for Liverpool.

Messrs. Alder & Mackay, Ltd., Edinburgh, have secured an order for the supply and erection of four 5 c.ft. standard test holders of the latest type for the Corporation of Liverpool. They have also been successful in their offer for the reconstruction of a 10 c.ft. standard test holder for the County Borough of Blackburn.

"Simplex" Water Gas Plant.

The Harpenden District Gas Company have placed a contract with the Vertical Gas Retort Syndicate, Ltd., 17, Victoria Street, Westminster, S.W. 1, for an improved type twin generator "Simplex" water gas plant. This firm also have retort bench reconstruction in hand for the Freshwater Gas Company, Ltd., with twin external producers.

STOCK AND SHARE LIST.

Official Quotations on the London and Provincial Stock Exchanges.

[For Stock Market Report, see earlier pages.]

Issue.	Share.	When ex-Dividend.	Dividends. Prev. Hf. Yr.	Dividends. Last Hf. Yr.	NAME.	Quotations. Mar. 19. (Provincial Exchanges Mar. 18.)	Rise or Fall on Week.	Transactions. Lowest and Highest Prices During the Week.
£			% p.a.	% p.a.				
1,551,868	Stk.	Oct. 5	7⅞	7⅞	Alliance & Dublin Ord. ...	105—110	...	106⅝—109
374,000	,,	Jan. 4	4	4	Do. 4 p.c. Deb. ...	65—70	...	...
557,655	,,	Mar. 14	7	7	Barnet Ord. 7 p.c.	118—123*	−2	...
300,000	1	Oct. 19	1/9⅓	1/4⅓	Bombay, Ltd.	15/—20/-	...	...
177,750	10	Feb. 29	9	9	Bournemouth 5 p.c. ...	14½—15½	...	...
500,050	10	,,	7	7	Do. B 7 p.c. ...	12½—13⅛	+⅛	13—13⅛
439,160	10	,,	6	6	Do. Pref. 6 p.c. ...	11—12	...	11⅝
50,000	Stk.	Dec. 14	3	3	Do. 3 p.c. Deb. ...	57—62	...	...
162,025	,,	,,	4	4	Do. 4 p.c. Deb. ...	77—82	...	...
210,000	,,	,,	5	5	Do. 5 p.c. Deb. ...	99—104	...	103½
					Brighton, Hove, & Worthing 6 p.c. Con. ...	113—118*	−2	...
357,900	,,	Mar. 14	7½	7½	Do. 5 p.c. Con. ...	105—110*	...	110
540,000	,,	,,	6⅔	6⅔	Do. 6 p.c. B Pref.	104—109*	−1	108½—109
195,500	,,	,,	6	6	Bristol 5 p.c. max.	92—94a	+2	...
1,287,500	,,	Feb. 29	5	5	Do. 1st 4 p.c. Deb. ...	80—82a	+3	...
120,420	,,	Jan. 4	4	4	Do. 2nd 4 p.c. Deb. ...	80—82a	+3	...
217,870	,,	,,	4	4	Do. 5 p.c. Deb.	97—98a	...	111½—112
328,790	,,	,,	5	5	British Ord.	110—115	...	116
855,000	,,	Oct. 5	8	7	Do. 7 p.c. Pref.	110—116	...	...
100,000	,,	Jan. 4	7	7	Do. 4 p.c. Red. Deb. ...	75—80	...	...
120,000	,,	,,	4	4	Do. 5 p.c. Red. Deb. ...	95—100	...	...
450,000	,,	,,	5	5	Cambridge 5 p.c. Deb. ...	95—100	...	...
160,000	,,	Jan. 4	5	5	Cape Town, Ltd.	8¾—9¼	...	...
100,000	10	Nov. 30	8	6	Do. max. div.	82—87	+3	82—84
100,000	10	Oct. 30	4½	4½	Do. 4½ p.c. Pref. ...	6¾—7¼	...	102
150,000	Stk.	Jan. 4	4½	4½	Do. 4½ p.c. Deb. ...	65—70	...	...
626,860	,,	Feb. 15	6	6	Cardiff Con. Ord.	93—96	...	...
237,860	,,	Jan. 4	2⅔	5	Do. 5 p.c. Red. Deb.	95—100	...	...
157,150	,,	Feb. 15	5	6½	Chester 5 p.c. Ord.	84½—89½	...	...
98,936	1	Oct. 5	12/-	2/-	Colombo, Ltd. Ord.	27/—32/-	...	...
24,500	1	,,	1/4⅓	1/4⅓	Do. 7 p.c. Pref.	17/—19/-	...	...
609,204	1	Oct. 19	1/3·27	/10·90	Colonial Gas Assn. Ltd. Ord.	10/—15/-	...	...
296,053	1	,,	1/5·67	1/2·54	Do. 8 p.c. Pref.	10/—15/-	...	...
2,073,280	Stk.	Feb. 15	6	5¼	Commercial Ord.	95—98	...	97½
475,000	,,	Dec. 14	3	3	Do. 3 p.c. Deb. ...	56—61	...	...
807,560	,,	Feb. 15	7	7	Croydon sliding scale	107—110	...	109⅞
469,590	,,	,,	5	5	Do. max. div.	82—87	+3	82—84
500,000	,,	Jan. 4	5	5	Do. 5 p.c. Deb.	99—102	...	102
542,270	,,	Feb. 29	7	10	Derby Con.	117—122e	...	...
55,000	,,	Jan. 4	4	4	Do. Deb.	65—70e	...	...
209,000	,,	Mar. 14	5	5	East Hull Ord. 5 p.c. ...	71—76*	...	74—74½
179 500	,,	Feb. 29	5⅓	5⅓	East Surrey Ord. 5 p.c. ...	90—95	...	91
155,019	,,	Jan. 4	5	5	Do. 5 p.c. Deb.	96—101	...	...
1,002,180	,,	Mar. 14	14	16⅔	European, Ltd.	102—112*	−3	105—107
19,405,992	,,	Feb. 15	5⅔	5⅔	Gas Light & Coke 4 p.c. Ord.	19/9—20/9f	...	19/10½—20/6
2,600,000	,,	,,	3⅓	3⅓	Do. 3½ p.c. max.	59—64	+1	62½
4,477,106	,,	,,	4	4	Do. 4 p.c. Con. Pref. ...	79—83	+1	80—82
6,102,497	,,	Dec. 14	3	3	Do. 3 p.c. Con. Deb. ...	61—64	+1	61½—63
3,642,770	,,	,,	5	5	Do. 5 p.c. Red. Deb. ...	100—103	...	...
2,500,000	,,	,,	4½	4½	Do. 4½ p.c. Red. Deb. ...	91—94	+2	91
162,280	,,	Feb. 29	10	10	Harrogate Cons. 10 p.c. max.	157—162	...	...
82,500	,,	Mar. 14	7	7	Hastings & St. L. 5 p.c. Conv.	93—98*	−2	...
258,740	,,	,,	5½	5½	Do. 3½ p.c. Conv.	80—85*	−1	...
70,000	10	9 Oct. '30	⅓	10	Hongkong & China, Ltd. ...	11—12	...	...
213,200	Stk.	Feb. 29	6	6	Hornsey Con. 3½ p.c. ...	87—90	...	...
2,800,000	,,	Oct. 30	25	15	Imperial Continental Cap.	360—380	...	366—374
223,180	,,	Feb. 1	3½	3½	Do. 3½ p.c. Red. Deb.	68—73	...	...
235,242	,,	Mar. 14	8½	8½	Lea Bridge 5 p.c. Ord. ...	126—129*	−3	...
2,145,907	,,	Feb. 29	6	6	Liverpool 5 p.c. Ord. ...	98¾—99½b	−½	...
245,500	,,	—	—	5	Do. 5 p.c. Red. Pref. ...	94—99b	...	...
306,083	,,	Jan. 15	4	4	Do. 4 p.c. Deb. ...	78—80b	...	...
165,736	,,	Feb. 15	8	10	Maidstone 5 p.c. Cap. ...	124—129	...	...
56,176	,,	Jan. 4	3	3	Do. 3 p.c. Deb. ...	55—60	...	...
75,000	£	Nov. 30	110	110	Malta & Mediterranean ...	6½—7	...	...
					Metropolitan (of Melbourne)			
392,000	—	Oct. 1	5½	5½	5½ p.c. Red. Deb.	78—83	...	...
171,978	Stk.	Feb. 29	5	5	M. S. D. Utility "C." Cons.	76—81	...	...
718,657	,,	,,	4	4	Do. 4 p.c. Cons. Pref.	67—72	...	...
112,126	,,	g	4	4	Do. 4 p.c. Deb. ...	70—75	...	...
148,955	,,	g	5	5	Do. 5 p.c. Deb. ...	95—100	...	...
675,000	,,	May 21	16	16	Montevideo, Ltd.	70—80	...	...
2,061,315	,,	Feb. 29	5	5½	Newcastle & Gateshead Con.	17/—18/-d/	+-/6	...
682,856	,,	,,	4	4	Do. 4 p.c. Pref. ...	71—73d	+2	...
691,705	,,	Jan. 4	3½	3½	Do. 3½ p.c. Deb. ...	67—68d	...	...
277,285	,,	Oct. 30	5	5	Do. 5 p.c. Red. Deb.	96—98d	...	...
199,940	,,	Mar. 14	7½	7½	North Middlesex 6 p.c. Con.	106—111*	−2	...
396,160	,,	Feb. 15	5	5	Northampton 5 p.c. max. ...	72—77	...	...
300,000	,,	Nov. 30	7	9	Oriental, Ltd.	88—98	...	...
60,000	£	18 May, '15	—	—	Ottoman	0—¼	...	...
205,162	Stk.	Jan. 4	8	8	Plym'th & Stonehouse 5 p.c.	118—123	+5	...
504,416	,,	Feb. 15	8	8	Portsm'th Con. Stk. 4 p.c. Std.	122—127	+6	125
241,446	,,	,,	5	5	Do. 5 p.c. max. ...	78—83	...	...
686,312	,,	Jan. 18	4	4	Primitiva 4 p.c. Rd. Db. 1911	77—82	...	...
389,813	,,	Jan. 4	4	4	Do. 4 p.c. Cons. Deb.	77—82	...	80
150,000	10	Sept. 21	6	6	San Paulo 6 p.c. Pref. ...	7¼—7⅞	...	...
1,786,968	Stk.	Sept. 7	6½	6	Sheffield Cons.	103—105e	...	...
95,000	,,	Jan. 18	4	4	Do. 4 p.c. Deb.	79—81e	...	...
133,201	,,	Feb. 29	8½	5	Shrewsbury 5 p.c. Ord. ...	88—93	...	...
90,000	10	June 11	15	15	South African	3—5	...	...
6,709,895	Stk.	Feb. 15	5	7	South Met. Ord.	101—104	...	101½—103⅔
1,135,812	,,	,,	6	6	Do. 6 p.c. Irred. Pf.	112—117	+2	113—115½
1,895,445	,,	Jan. 4	3	3	Do. 3 p.c. Deb. ...	59—62	...	60
1,000,000	,,	Jan. 18	4	5	Do. 5 p.c. Red. Deb.	99—103	...	102
91,500	,,	Aug. 10	8½	8½	South Shields Con.	125—127d	+3½	...
1,543,795	,,	Feb. 15	6½	6	South Suburban Ord. 5 p.c.	102—107	...	104—105
668,887	,,	Jan. 4	5	5	Do. 5 p.c. Deb.	97—102	+1	99¼—100¼
647,740	,,	Feb. 29	5	5	Southampt'n Ord. 5 p.c. max.	74—79	...	...
121,375	,,	,,	4	4	Do. 4 p.c. Deb.	75—80	...	...
250,000	,,	Aug. 21	7	7	Swansea 7 p.c. Red. Pref. ...	96—99	...	...
200,000	,,	Jan. 4	6½	6½	Do. 6½ p.c. Red. Deb.	98—101	...	...
1,076,490	,,	Feb. 29	6⅔	6⅔	Tottenham and District Ord.	104—108	...	106
300,000	,,	,,	5½	5½	Do. 5½ p.c. Pref. ...	93—98	...	...
199,005	,,	Dec. 14	4	4	Do. 4 p.c. Deb. ...	75—78	...	...
85,701	,,	Sept. 21	6	6	Tuscan, Ltd., 6 p.c. Red. Db.	72—77	...	...
					Uxbridge, Maidenhead, & Wycombe 5 p.c.	100—105	...	...
346,069	,,	Feb. 29	7	7	Do. 5 p.c. Pref. ...	87—92	...	87
88,330	,,	,,	5	5	Wandsworth and District: Consolidated	112—117	...	...
1,322,220	,,	Feb. 29	7	7	Do. 5 p.c. Pref.	97—102	+4	100—100½
971,373	,,	,,	5	5	Do. 5 p.c. Deb.	98—103	+1	100—102
1,167,964	,,	Jan. 4	5	5				

Quotations at:—*a.*—Bristol. *b.*—Liverpool. *c.*—Nottingham. *d.*—Newcastle. *e.*—Sheffield. *f.*—The quotation is per £1 of stock. *g* The interest due 1/1/32 was paid on that date. * Ex. div. † Paid free of income-tax. ‡ For year. § Div. =10 p.ct. p.a. less tax and less tax on interim dividend.

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By Order of the Directors.

THE WATFORD AND ST. ALBANS GAS COMPANY

OFFER FOR SALE BY TENDER

£100,000

5½ PER CENT. PREFERENCE STOCK

at a Minimum Price of £97 for £100 Stock.

Dividend accrues from 1st May, 1932.

Last day for receipt of Tenders 2nd April, 1932

Particulars of Sale and Tender Forms from the SECRETARY AND COMMERCIAL MANAGER, GAS-WORKS, WATFORD, or the Company's Stock-brokers, ANGEL H. HART & CO., 10/11, AUSTIN FRIARS, E.C. 2.

By Order of the Directors.

TUNBRIDGE WELLS GAS COMPANY.

Messrs. A. & W. RICHARDS

are Instructed to OFFER FOR SALE BY TENDER

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Yielding at that Price, £5 3s. 9d. per cent.

Prospectus and Form of Tender (which latter must be sent in by 11 o'clock on Thursday, the 7th of April) may be obtained of A. & W. RICHARDS, 37, WALBROOK, E.C. 4.

(This announcement is inserted gratuitously.)

PETER—WITH ONE EXCEPTION

With one exception Peter is an ordinary little fellow. Chubby, likeable, just five-and-a-half, full of life and fun and on occasions—be it admitted—of naughtiness.

Just now Peter's rather important, for this is his first term at school, and he's grappling with the intricacies of "A B C" and "Twice Two": difficult subjects to all men of five-and-a-half, but even more difficult in Peter's case because—bad luck—he's totally blind. That's his One Exception.

Peter learns reading, writing, and 'rithmetic through the medium of "Braille"—dull stuff compared with the coloured picture books of most five-and-a-halfs. However, he's a stout lad is Peter, and he's making great progress.

Would you like to know more about him? How, in spite of his "One Exception," he is being educated, and, when older, technically trained and usefully employed.

There is a long waiting list of "Peters" throughout the British Isles, for whom training and accommodation must be provided in the immediate future.

Will you help with a donation or annual subscription? Any sum, large or small, will be gratefully received.

Here's a suggestion. Your eyesight is worth 3d. a year to you. Send Peter and his handicapped pals 3d. for every year you've had it. Now, please, in case it slips your memory. Good idea!

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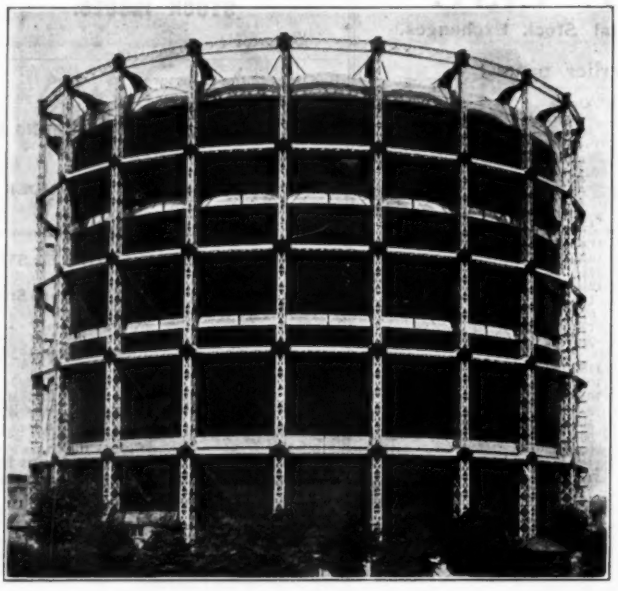

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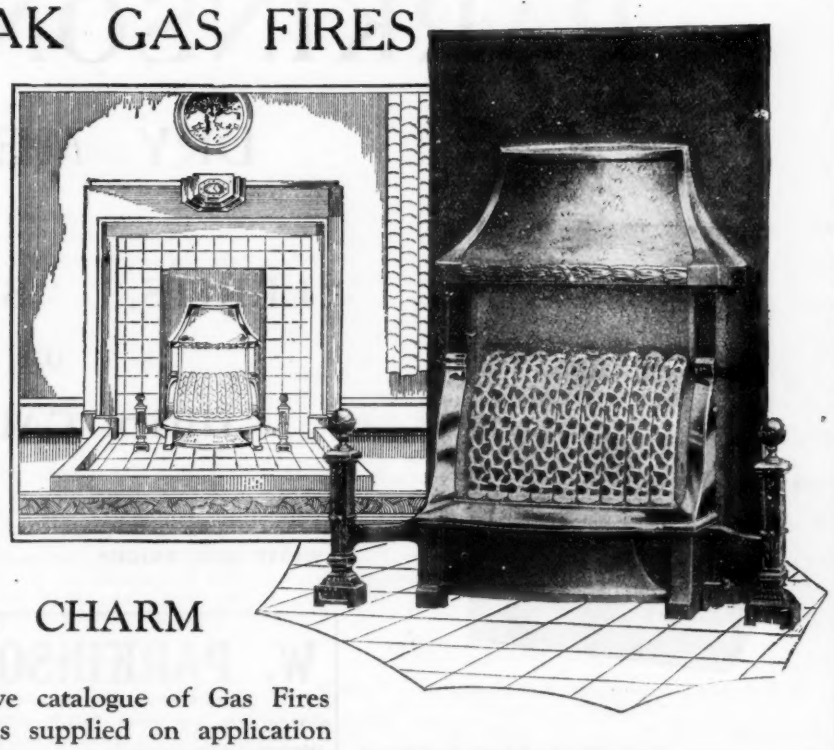

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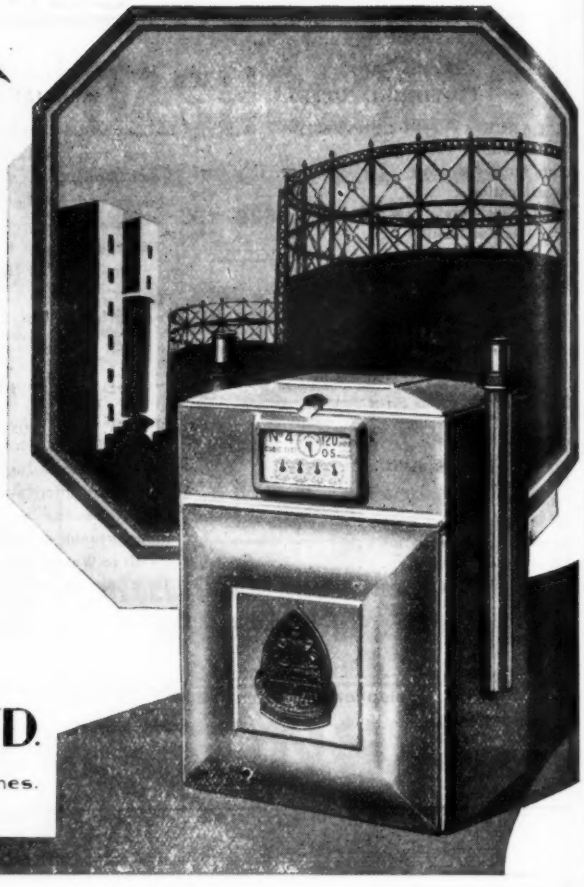

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